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'We Will Have Merchant Marine'

President Harding Notifies World of His Determination to
Maintain Country's Present Rank in Ocean Commerce

ADDRESSING congress, the President said: "The disturbing situation of Europe and particularly the critical posture of the great maritime powers, requires that we should not overlook the tendency of a war, and even of preparations for a war, among the nations most concerned in active commerce with this country, to abridge the means, and thereby at least enhance the price, of transporting its valuable productions to their proper markets.

"I recommend it to your serious reflection, how far and in what mode it may be expedient to guard against embarrassments from these contingencies, by such encouragements to our own navigation as will render our commerce and agriculture less dependent upon foreign bottoms, which may fail us in the very moments most interesting to these great objects."

The President who delivered this address was George Washington. The congress addressed was the first in the country's history. The date was Dec. 8, 1790.

Transportation Ranks Next to Production

"In the emergency of war we have constructed a tonnage equalling our largest expectations. Its war cost must be discounted to the actual values of peace, and the large difference charge to the war emergency, and the pressing task is to turn our assets in tonnage to an agency of commerce.

"It is not necessary to say it to congress, but I have thought this to be a befitting occasion to give notice that the United States means to establish and maintain a great merchant marine.

"Our differences of opinion as to a policy of up-building have been removed by the outstanding fact of our having built.

"Manifestly if our laws governing American activities on the seas are such as to give advantage of those who compete with us for the carrying of our own cargoes and those who ought naturally come in American bottoms through trade exchanges, then the spirit of American fair play will assert itself to give American carriers their equality of opportunity.

This republic can never realize its righteous aspirations in commerce, can never be worthy the traditions of the early days of the expanding republic until the millions of tons of shipping which we now possess are co-ordinated with our inland transportation and our shipping has government encouragement, not government operation, in carrying our cargoes under our flag, to every world market.

"It will strengthen American genius and management to have it understood that ours is an abiding determination, because carrying is second only to production in establishing and maintaining the flow of commerce to which we rightfully aspire."

This message was delivered by the latest President before the latest congress, being a part of President Harding's personal address to congress on April 12.

Anxious to Meet a National Need

This comparison of the official utterances of the first and latest American presidents has an interest beyond the mere parallel of thought. President Washington was addressing a nation whose citizens were largely interested in shipping as a means of livelihood. His views as supported by congress, gave the United States the merchant marine which a century ago was in the front rank of the world's commercial fleets.

President Harding addresses a nation most of whose citizens had for years forgotten the fixed relation of commercial ocean independence to the prosperity of a country itself. The war taught the lesson that Washington foresaw in 1790. President Harding calls attention to the necessity of interpreting this lesson in time of peace.

The new Chief Executive has carried into the White House the same sincere interest in merchant marine problems which has marked his entire public life. His emphatic declaration in favor of a great merchant marine carries with it an assurance of a successful solution of this half-century-old problem. The country needs a merchant marine. A President has finally been obtained who intends to meet that need.

Practical U. S. Ship Problems-I

Analysis of Economic and Commercial Questions Which Will Affect America's New Merchant Fleet

BY ROBERT EDWARDS ANNIN

If we could first know where we are, and whither we are tending, we could better judge what to do and how to do it.

THESE clear and simple words, spoken over sixty years ago in relation to a great national problem, apply, in equal degree, to the situation which confronts the commercial world, as an aftermath of the great war.

Modern civilization is, at the base, industrial. Commerce is, from its nature, dependent upon production. It follows that profitable commerce is impossible ex-

the market values of foreign currencies expressed in terms of our own.

Our own currency is now on a gold basis; that is, all of our government cur-

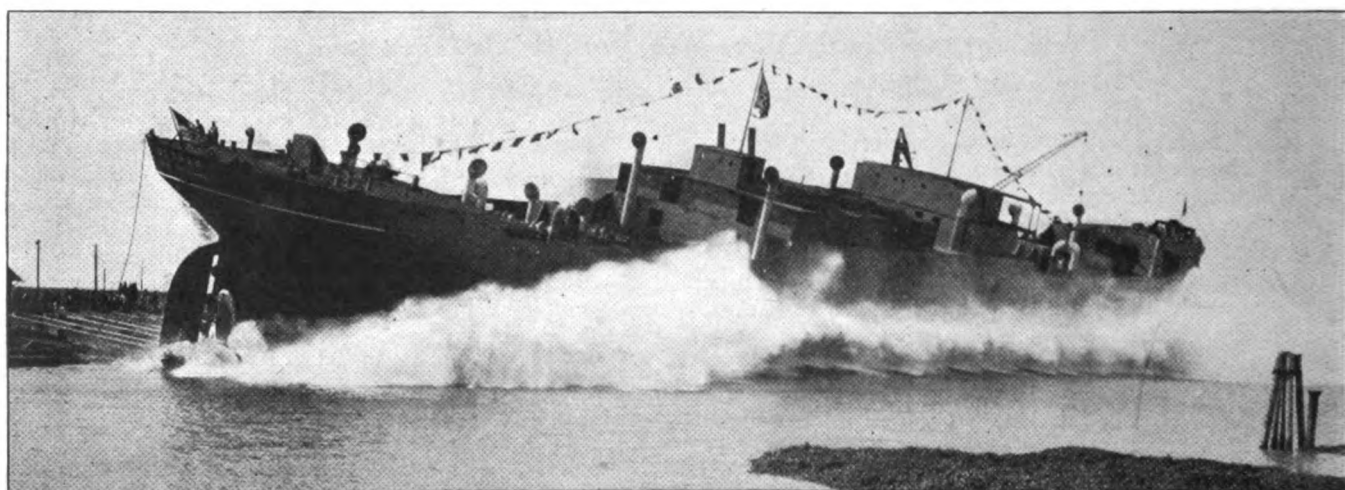
of foreign goods which they urgently require. Again, since this distorted relation of production to consumption has existed for some years, some of our most valuable customers abroad have already exhausted their credits.

To sum up, such customers cannot produce at home sufficient to fill their needs; and for what they require from abroad they can neither pay (in cash or commodities) nor obtain credit.

Therefore, relief from the present depression in ocean freights can only follow the revival of industry, defla-

What Series Will Show

IN THE series, which starts with this article, Mr. Annin will present a practical analysis of the problems of the new American merchant marine. This analysis covers not only the important political and legislative phases of the subject but also the actual op-



cept it go hand in hand with prosperous and productive industry.

The late war effected an appalling destruction of the instruments of production, among all the greatest industrial nations. This destruction has carried in its train disorganized commerce and finance. Before we can hope for sound progress toward normal conditions, the underlying causes of the present situation must be diligently sought, clearly understood, stripped of generalities and jargon and bravely confronted.

As applied to the present world situation in ocean shipping, the babel of voices is quite as incoherent and confusing as in other directions. Here, too, we have the familiar mental confusion between cause and effect.

For instance, the statement that the chief obstacle to our export trade is the depression in European exchange, is about as illuminating as to say that measles result from spots on the skin.

The depression in foreign exchange is far less a cause than a symptom. To us, rates of foreign exchange simply mean

erating problems which demand solution before success will meet America's new entry into the field of worldwide ocean competition. Mr. Annin has the fundamental training essential for discussing this subject, based on nearly thirty years of actual experience in operating ships. His ability to analyze today's problems is evidenced by the books on shipping subjects which he has written. The series will prove of value to anyone interested in America's marine future, whether as a student or as an executive charged with the task of keeping the new merchant fleet in service or, like above, of building ships.

rencies are, on demand, redeemable in gold. European currencies are below the parity of ours because they cannot be now redeemed in gold.

The capacity of European nations to produce marketable commodities has been so reduced by war that their surplus values (after supplying their own immediate needs) are insufficient to offset the value

tion of currency, restoration of credits and the resumption of international trade under something approaching normal conditions. To look for a profitable ocean traffic, previous to material improvement in all these respects, is simply to expect that effect will precede cause.

This situation is serious enough. But European conditions have been aggravated by an immense over-speculation in certain lines—for example, freights, coal and sugar. About the middle of 1920 the world's markets, in these and other commodities, collapsed, bringing many supposedly strong interests, here and abroad, to or over the edge of bankruptcy.

The influence on ocean freights was instantaneous. In less than a year transatlantic rates, for instance, have declined from a point which showed a profit of from \$8 to \$10 per cargo ton, after covering interest, depreciation and repairs, to a level which shows a loss of from \$2 to \$3 per cargo ton, allowing nothing for those items.

As Europe has so little to export, our ships must come back either in ballast

or with cargoes the freights on which will barely pay the cost of fuel; so that a vessel carrying 5000 tons outward and returning in ballast will show a cash loss of from \$10,000 to \$15,000. Ocean freights are today on a basis where the gross freight lists cannot cover the cash paid out for operating expenses.

It results that merchant ships of all flags have been and are now being retired from service, because "lay-up" involves smaller loss than operation. Even the Norwegians, who can operate their ships at least cost, are putting them out of commission.

Coming to the fleet owned by the American taxpayers—the shipping board fleet—a large proportion is now idle. More ships are likely to be laid up before any material improvement in conditions is probable. Adding this to the idle fleets of Europe and Japan, and surveying the world conditions in industry and finance, it is clear that no immediate recovery in freights is to be anticipated. The laid-up fleet must hang as a threat over the freight market until the restored commerce of the world shall gradually absorb the idle tonnage. Hence, the American taxpayer has on his hands about ten million tons of ships which cost him big money whether they be operational, sold or scrapped. This is where we are.

Whither are we tending?

The answer to this question depends altogether upon the attitude of the American taxpayer toward the maintenance of a merchant marine under the American flag.

Continue or Quit

The greatest shipowners in the world are the American taxpayers. Collectively they own the greatest single merchant fleet in history. It is paid for, or must be paid for, and the question of its disposition must be answered by them or through their representatives.

Shall we hold or quit?

There is a plausible argument in favor of quitting. Ships are today a liability rather than an asset. To lay up an ordinary cargo ship is only less costly than to operate her. Certain expenses may be avoided by lay-up, such as wages, subsistence, fuel, port charges, loading and discharging, etc. But interest, depreciation and repairs will continue and sooner or later must be written off whether the ships be kept in commission or not.

But the actual losses of operation could be saved by refusing to operate. The fleet then could be laid up until there should be a market for tonnage, and sold as opportunity might offer, on such terms as might prove practicable. The loss would have to be written off like other war costs. In that case our ocean traffic could be expected to gradually resume

the position which it occupied before 1914—that is, there would be few of our ships afloat outside of our coastwise and colonial trade.

In spite of the appalling immediate loss that would have to be faced, this is probably the least expensive course to pursue. Moreover, the loss would be less than appears at first glance. A certain proportion of the fleet will never pay operating costs in normal markets. Such ships can neither be operated nor sold. They are already a loss. Many of them will never earn their repair bills. These need not be considered in planning the disposition of the fleet, for under any probable circumstances they will always cost more than they can earn.

Why We Need Shipping

This course, while probably the cheapest for the moment, disregards two factors which have thus far governed our action in striving to build up a merchant marine:

First. The question of defense. The years 1914 to 1919 conclusively proved that the control of a merchant fleet may be essential to the national defense; more, it will be an absolute essential whenever we have to maintain an overseas army. After our late experience no argument is needed to show what might be our situation should we again be caught without an auxiliary merchant fleet.

Second. The question of future trade. Ever since our Civil war we have depended upon foreign tonnage to carry our exports and imports, because they could do it cheaper than we could do it. The most prosperous period of American seafaring came to a close shortly after the middle of the last century. For the change there were many contributing factors, but the main cause was the superseding of wooden hulls by steel and the displacement of sail power by steam. As long as the wooden hulls dominated the ocean and sail propulsion prevailed, our seaboard forests, mechanical ingenuity and our cheap production of cotton and naval stores sufficed to neutralize the lower wage levels of Europe in the carriage of ocean traffic. But with the advent of iron and steel construction and the progressive displacement of sails by steam, these advantages disappeared and other pursuits offered higher rewards to both capital and labor on this side. Therefore, from 1870 to 1914, American deep sea tonnage gradually ceased to be an important factor in the carrying trade of the world. In the meantime, we had become one of the most important exporters of foodstuffs and raw materials.

Before the great war broke out, however, far-seeing statesmen perceived that a change in our economic situation was approaching and that our national policies

might have to be modified to meet new conditions. The last speech made by President McKinley evidenced a keen appreciation of the fact that in the not far distant future we should have to look to foreign trade to absorb the surplus products of our industry.

This situation is now here. It has been approaching for many years. The great war was not the cause of it, but has certainly been the means of hastening our recognition of it.

Our situation of 30 years ago was fully appreciated by our foreign competitors. The great maritime nations took no action against American shipping because they did not fear it. They knew that we were not serious competitors for the carrying trade, and they knew why. They knew that foreign trade was merely an adjunct and not the backbone of American industry. But to England, for instance, her ocean traffic and export business were absolutely vital, in order that her wide empire might be bound together and her dense industrial population find employment. For this reason, and because she needed to import cheap foodstuffs and raw materials, her policy toward all the world, ourselves included, was liberal in matters of trade.

Competition for Survival

No thoughtful man can watch the utterances of foreign statesmen, the drift of foreign opinion, or the utterances of the foreign press without realizing that we are today regarded as serious competitors, upon the ocean and in foreign markets, and that the competition which we must meet will be a general survival of the fittest. Hence we must expect and prepare for a change in the treatment which we have received from abroad in matters of foreign trade. Our neighbors will not give up any part of their export and freighting business until they have exhausted every weapon of defense at their command. In the struggle for carrying trade, and export markets, they will discriminate against us by every available method, from freight rates to protective tariffs.

Under such circumstances we can not wisely plan our future course by the light of conditions which already have passed away.

This, apart from the unanswerable argument of national defense, is the strongest point made by the advocates of an American merchant marine, and it is on these two considerations that they base their arguments. Therefore, if the decision be to quit, that is, to dispose of the ships already built for what they will bring, it should be clearly understood that this would mean a return to our former maritime dependence, in peace and war, for a generation at least; for if the ships

be sold *without restriction as to flag*, they will be operated under foreign flags, because it will be more economical to so operate than under the conditions made by American labor and American legislation.

Should Sales Be Unrestricted?

To illustrate: the operating cost of a Japanese ship today for wages and subsistence only is but little more than half the cost of operating an American ship of similar size and class. At the present level of Norwegian exchange, cost of wages and subsistence on Norwegian vessels will be about 40 per cent of ours. Obviously, in a competition which will cut to the bone ships that can operate, respectively, for 50 and 40 per cent of our wages and subsistence will have a great advantage. The cost of construction and repairs also is higher here than abroad, meaning, of course, a higher expense for maintenance, interest, depreciation, insurance and repairs. For this reason the *unrestricted* sale of our ships will result in their promptly passing under foreign flags, and our merchant marine will be back where it was in 1913.

If, however, the ships are sold *with the restriction* that they must be operated under our flag (and therefore subject to existing American laws, as well as the higher expenses of operation under our flag), they must either be run at a loss for the present or laid up. In either case it will result that when the ships, through marine casualties, age or other causes, are lost or scrapped they will not be replaced under our flag.

Further, even among those ships which may be considered as possibly able to compete for traffic, there is a great difference in value, efficiency and probable duration of service. To some of the ships now running, and considered fairly good, experienced engineers give not more than five years of activity before the cost of maintenance will more than offset the profits of operation in normal markets. Such a condition marks the end of commercial service in any cargo ship.

Therefore, the life of our merchant marine, under economic conditions which will discourage continuous construction and operation, probably would be a short if not a merry one.

These are good grounds for concluding that the sale of the fleet would mean the end of our experiment in establishing a permanent merchant marine. And if the experiment be now abandoned it is a safe guess that this generation will not see it repeated.

If, on the other hand, it be decided that a merchant fleet must be maintained for reasons of national defense, and for protection and development of our for-

eign commerce, the question of method becomes vital. Government operation, pure and simple, is unthinkable. If there were any question that the machinery of constitutional government is unfitted for the operation of commercial enterprises, our recent experience in government management of railroads would provide a complete answer.

No such government operations can be undertaken under our form of government without the intrusion of "politics" (of the kind usually put in quotations) into the problem, and the intrusion of "politics" always involves the question of patronage.

Dickens once remarked that much of English law was incomprehensible until one found the keynote, and that the keynote, as he stated, was to make business for lawyers. Once this is realized, he said, the whole system of English law becomes intelligent and coherent. Changing the application, it may be said that the working of "politics" under popular institutions is impossible to understand unless one realizes that one main purpose of "politics" is to provide jobs for politicians. It has been so from King Nebuchadnezzar to President Wilson, and no other result can be expected until the public service is confined to supermen. Now, in a business so keenly competitive as ship operation, no considerations can wisely influence the choice of personnel, except experience, ability and character. Any other principle of selection is fatal to good results.

Why Federal Operation Fails

This, however, is not the chief argument against government operation. Weakening of the element of personal interest, diffusion of authority and division of responsibility are others. Where authority is diluted, efficiency is sacrificed; where responsibility is divided, conscience is subdivided; for the stimulus of close, personal (and, if one please), selfish interests in results, there are no equivalents and only shabby, makeshift substitutes.

As there appears no volume of public sentiment in favor of government operation, pure and simple, that course may be dismissed with this brief reference.

An alternative course has thus far been pursued—that of operation by private firms under close and detailed governmental direction.

Of this it may be sufficient to say that, by common consent of all, from the individual operators to the chairman of the shipping board, the results have not been satisfactory.

Such a method cannot be kept altogether free from "politics," but beyond this the dilatory operation of cumbersome government machinery, in a worldwide

competition hourly involving prompt decision and quick action, is about as effective as would have been the field command of the allied armies by a congressional committee. If, therefore, it is decided to endeavor to maintain our merchant fleet, if to do so under private ownership is at present impossible; if, further, it cannot be effectively operated by government machinery, the indicated course is clearly toward the utilization of private initiative and experience under government ownership, until present conditions shall improve. How this may be done will be considered in the next article.

(To be continued)

Will Build Drydock

Work will be begun at once on construction of the Canadian government's drydock at Esquimalt, B. C. The contract for this work has been awarded to Peter Lyall & Sons Construction Co., Montreal and Vancouver, B. C. About 2000 workmen will be employed when the work is fully under way. The successful bid was approximately \$4,300,000. It marked culmination of negotiations, which have been in progress for many years.

When completed, the Esquimalt drydock will be among the largest in the world, the dimensions being as follows: Length from caisson top to head wall, 1150 feet; width of entrance 120 feet; depth on sill at ordinary high water spring tides, 40 feet; width at coping of dock walls, 144 feet. The drydock will be divided into two parts, 650 feet and 500 feet in length respectively. Each part will be closed by a steel caisson. The drydock will be emptied by three centrifugal pumps, each having a capacity of 60,000 gallons per minute. The pumps and other machinery will be operated by electricity generated by the dock's own power plant.

First water shipments from Cincinnati to north Pacific ports recently left the Ohio city by river steamer for transfer at New Orleans to a vessel of the Gulf & Caribbean line which operates to Seattle. These shipments are made possible by means of a through bill of lading by water.

Capt. John H. Hewitt, veteran sea captain employed by the New England Navigation Co., died recently in his seventy-sixth year, at Providence, R. I. He had many medals awarded for bravery and heroic rescues during his long career.

What will probably be a monthly service from Boston to the Far East was announced recently by John S. Emery & Co., Inc.

Builds New Liner for Cunard

British Yard Constructs Largest Merchant Vessel Ever
Built on the Mersey—Is Forerunner of New Fleet

THE SAMARIA, launched from the shipbuilding yard of Messrs. Cammell Laird & Co., Ltd., Birkenhead, England, will in her construction and fitting-out represent some of the latest developments of the art of shipbuilding. In many respects she will possess features which set up a new departure in Atlantic travel from the point of view of the comfort and convenience of passengers.

The launch of the SAMARIA from this yard harks back to 1882 for the only previous association between the present builders and the company from the point of actually building a ship. In that year the Messrs. Laird Brothers built the CEPHALONIA, an iron screw steamer which proved a successful unit of the Cunard company's Boston service. The CEPHALONIA had a length of 440 feet 6 inches, breadth of 46 feet 3 inches and a depth of 36 feet. Her gross tonnage totaled 5517, and her compound engines developed 4000 indicated horsepower and a sea speed of 13 knots. These dimensions, together with the figures of the old SAMARIA, built in 1868 (length 311 feet, beam 39 feet, depth 28 feet 3 inches, 2574 gross tonnage, horsepower 1590 and speed 11 knots) make an interesting comparison with those of the ship under review and reveal something of the progress made during the last 50 years in ship construction.

The new SAMARIA has a length over all of 623 feet 9 inches; length between perpendiculars of 600 feet; breadth mold-

Cunard Program

The Cunard line suffered heavy losses through German submarine warfare. Not less than 15 vessels of the Cunard fleet were lost, equal to 56 per cent of the total tonnage. No time has been lost by the company in repairing this deficit, and 13 new ships, representing nearly 250,000 tons, were put under construction. They all represent in their design, both structural and fitting out, the very latest improvements of marine architecture. They are all to be built to burn oil fuel. Two of these steamers went in commission in January and February respectively. The ALBANIA, 12,000 tons, which will carry cabin passengers only, after making her maiden voyage in the Liverpool-Canada-New York service, returned direct to London and took her place in that service. The other ship, SCYTHIA, 21,000 tons, a sister ship of the SAMARIA, took her place in the Cunard Liverpool-Canada-New York service, calling at Queenstown. The TYRRHENIA, 16,000 tons, is expected to take her place in the company's passenger service early next summer. The remaining vessels will take the water in the near future. They are the FRANCONIA, LACONIA, and SERVIA, each 600 feet long; the ALAUNIA, ANDANIA, AURANIA, AUSONIA, ASCANIA, ANTONIA, all of which will be 520 feet in length. These vessels, with two exceptions, take the names of former vessels of the Cunard fleet, and include some which distinguished themselves on war service, and were lost through enemy action.

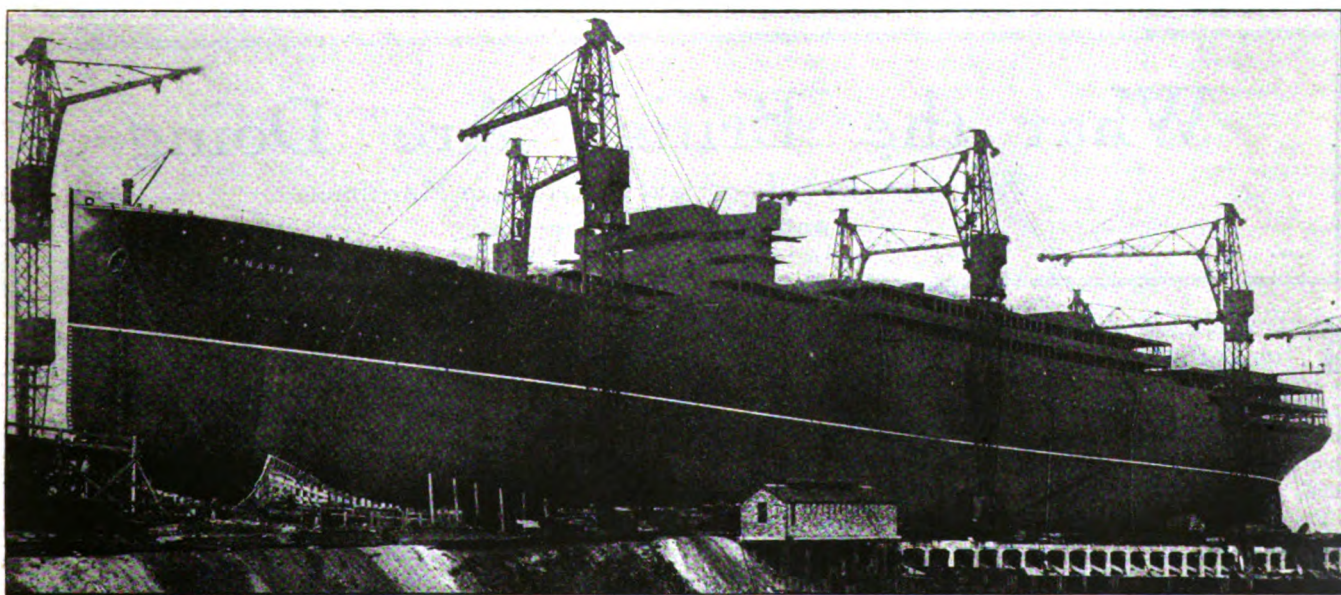
class, 340 second-class, and 1504 third-class.

The 1921 SAMARIA is the largest merchant vessel ever built on Merseyside; the first Mersey-built vessel of the liner type to possess propelling machinery consisting of the very latest improved type of Brown-Curtis turbines driving twin-screws through double reduction mechanical gearing; and the largest liner to be designed and built on the Mersey to burn oil fuel. Her auxiliary machinery will be driven by the improved electro-hydraulic system. She will also be fitted with a gyroscopic compass.

In the matter of passenger accommodation the SAMARIA will include features which previously have not been introduced to a vessel of her size. This is applicable both to first class and second class passengers. In the SAMARIA, too, it will be found that a successful effort has been made to provide third class passengers with every degree of comfort. For all classes of passengers the construction and design insures considerable space, both open and covered, for promenading, exercise and various games.

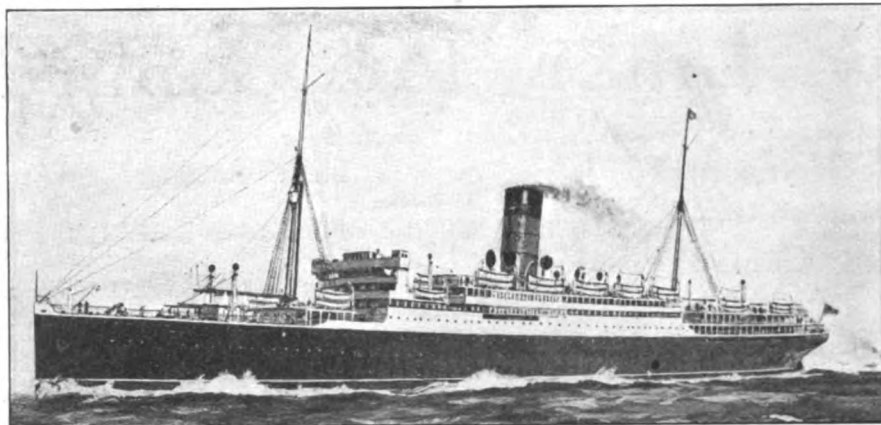
The passenger accommodations of the SAMARIA will extend over seven decks. One of the garden lounges will be situated on the port and one on the starboard side of the upper promenade deck. Here passengers will be able to enjoy the sun and the sea air amidst surroundings typical of an old English garden, fitted with many comfortable resting wicker chairs. Cold winds and

ed, 73 feet 6 inches; depth molded to shelter deck, 45 feet; gross tonnage, 2100; sea speed, 16 knots; accommodation for nearly 2600 passengers, 336 first-



SAMARIA ON THE LAUNCHING WAYS

This view of the Cunarder shows the cranes for quick handling of structural material in the Cammell-Laird yard



NEW CUNARD LINER SAMARIA AS SHE WILL LOOK IN SERVICE

rain will not interfere with the comfort of those who seek the tranquility of these garden lounges, for they will be enclosed on the outside of the vessel with sliding windows.

The main staircase forms itself into an imposing central hall, with approaches to the saloon drawing and writing room, lounge and smoking room. This grouping of the public rooms should prove of great convenience to passengers.

The ventilation of the public rooms and staterooms has been thoroughly studied and the latest improvements introduced.

The lounge will be particularly attractive. In plan it will be oval with an imposing central dome of white glass, exquisite ornamentation reminiscent of the Empire period. There will be four alcoves, diagonally opposite each other, and these will have separate windows. A massive fireplace with handsome marble mantelpiece will be surmounted by a picture in the style of the period. At each side of the fireplace and at the opposite end will be gilt console tables.

Each of the two engine sets has one

high pressure and one intermediate pressure turbine driving in tandem, one pinion and one low pressure turbine driving the other pinion of the first reduction gearing and thence through the second reduction gearing to the main shaft. Compound astern turbines are incorporated in the exhaust casings of the intermediate and low pressure ahead turbines. The high pressure turbines are supplied with superheated steam and the low pressure turbine exhausts to the main condensers which are suspended directly below the turbines and are designed for a high vacuum.

There are three double-ended and three single-ended cylindrical marine type boilers supplying steam at a pressure of 220 pounds per square inch, and fitted for burning oil fuel on the Howden-Wallsend system. The double-ended boilers have each eight furnaces and the single-ended boilers four; Schmidt's smoke-tube type of superheaters are fitted. The installation is supplied with high-class auxiliary machinery, including Messrs. Weir's latest closed feed system for dealing with the feed water, turbo-driven main feed

pump and turbo-driven main circulating pumps. A number of motor driven pumps for general purposes are also fitted.

The system of forced lubrication installed insures a thorough supply of oil to the mechanical gearing and bearings and has been devised to meet the most modern requirements. The main thrust blocks which are of the Michell type are also supplied with forced lubrication. The propellers have cast steel bosses with separate blades of manganese bronze. All the steel forgings for the turbine rotors, gearing and line shafting have been supplied by the Sheffield works of Messrs. Cammell Lair & Co.

In the case of the SAMARIA, the propeller revolutions at full power will be about 90 per minute, corresponding to a speed of 2750 revolutions per minute for the high and intermediate pressure turbines and 770 revolutions per minute for the low pressure turbines. They will develop 13,500 stated horsepower, the two shafts driving the ship at 16 knots.

The auxiliary machinery provides yet another example of the very modern improvements and features which will be found in her construction. The arrangements for the rapid and efficient handling of cargo are of a very complete nature. Numerous steel derricks and cargo spaces are placed at each hatch and electro-hydraulic variable speed gear winches are fitted throughout. The boat winches, capstan, windlass, warping winches and steering gear are all operated on the electro-hydraulic principle. There is thus a complete absence of big steam pipes running fore and aft in the ship interfering with promenade and accommodation space. Two large sets of turbo-driven generators are to be installed to supply power to the electrical appliances of the ship and an oil driven emergency dynamo is to be on "B" deck.

What the British Are Doing

Short Surveys of Important Activities in Maritime
Centers of Island Empire

INDICATIONS are the slump in shipping is not at an end. Unemployment is increasing. A few shipyards are able to keep a small number of employes engaged on ship repair work, but about 80,000 shipyard and allied workers are idle on the north-east coast. The Shipbuilding Employers' federation has suggested to the workers' representatives the necessity of a reduction of 6 shillings per week on time rates and 15 per cent on piece

prices. The employers point out that the 6-shilling advance upon time rates and 15 per cent increase on piece rates which was given last year, were given on the value of work being performed at the time when high prices were being paid for ships.

Now there is a tremendous slump in the industry, and the cost of production is out of all proportion to the prices which new tonnage can command. Therefore, it is claimed, the

basis upon which those advances were given has collapsed and the advances must be immediately discontinued if the builders are to be able to secure orders for new tonnage.

The suggestion is that these reductions should take effect at the end of April, but in the meantime the unions will have the opportunity of discussing the proposals. The number of workers in the Tees and Hartlepool area alone who will be affected by such reduction

is about 10,000, according to reports.

In support of the employers' claim it is urged that nearly 100 shipbuilding berths became vacant in February since when the number has increased. They are also faced with the fact that in 1920 over 230 new contracts were cancelled or suspended.

* * *

OWING to high costs in this country, repair work is going abroad. An instance of this is provided by the sending of the Italian liner *GUILIO CEASARE* from the northeast coast to Genoa to complete the necessary woodwork. The joiners' strike has resulted in several other vessels being sent abroad. Col. Leslie Wilson stated in the British house of commons that more than 20 British ships had been sent to continental ports during the last few months to be refitted and reconditioned, as the result of the joiners' strike. It is impossible to give a reliable estimate of the amount lost in wages but direct loss in repairs alone varied from \$20,000 to \$200,000 per ship.

* * *

THE decline in British export trade has in turn reflected upon every industry. Lack of orders for shipbuilding and kindred material has resulted in the extensive steel works of Messrs. Bolckow, Vaughan & Co. almost completely closing down making about 2000 men idle. The Dinsdale Smelting Co. has followed the example of other producers in putting several furnaces out of blast. Loss of overseas coal trade has caused the closing down of mines and the dismissal of between 60,000 and 70,000 men in the mining industry. The rapid decline in prices is indicated by the change in the coal export quotations over a period of three months. In December, 1920 the f.o.b. export quotation was about \$18.50; in January, 1921, about \$13.50; and in February about \$9.50. The present value is in the neighborhood of \$8.00. Faced by the large army of unemployed and very little money in the various unions, the miners realize they must fix up a temporary agreement, or, by allowing the notices to expire, throw themselves among the idle workers. The nationalization of the mines which so long has been a suggestion which found widespread support among the miners, is regarded as effectively killed by the present position of the industry.

* * *

ON THE Tyne, about 115 vessels with a net tonnage of 135,788, are laid up. So serious is the congestion in the river, that representations have been made to the shipping controller with a view to the removal from the

Tyne of vessels belonging to the government. To how great an extent shipping in the Tyne has been affected is shown by the small number of vessels launched in February, the total being eight of an estimated registered tonnage of 15,345. For the corresponding month of 1920, eight vessels of an estimated registered tonnage of 38,279 also were launched. The total from Jan. 1 to Feb. 28 this year was 19 vessels of 43,399 tons compared with 11 vessels of 44,006 tons for the corresponding period of 1920. On the Tees

similar slackness prevails. The tonnage of vessels passing in and out of the Tees during February totaled 212,824 tons, this being 22,937 tons less than in January. The number of vessels thus recorded was 193 for January and 194 for February. Looking hopefully to the future, however, the Tees Conservancy commission has in view a scheme to establish a new river line of 1000 feet. J. H. Amos, general manager of the Tees commission, is negotiating with the Sulphate Corp. for a works at Greatham Creek.

Favors One Marine Chief

Big Pacific Ship Firm Opposes Shipping Board Merger Into Commerce Department

HEARTILY endorsing the idea of establishing a cabinet post for a secretary of marine, A. F. Haines, vice president and general manager of the Pacific Steamship Co., Seattle, is strongly opposed to submerging the shipping board and the merchant marine in the department of commerce or any other department. Mr. Haines has just returned to his office after spending a month in California on business. He has given the subject considerable thought and study and as the Admiral line operates more American vessels than any other corporation in the United States, it is vitally interested in any proposed change.

Mr. Haines declares that the solution of the merchant marine problem lies entirely in correlating all federal departments supervising shipping under one responsible head. In taking this position he asserts that the retention of a shipping board such as now constituted is essential under the new department advocated. In the trend of his argument he shows that American shipping is greatly handicapped by having to deal with many different government departments. For instance, when an American ship enters or clears at or from an American port it must deal with at least three governmental bureaus—the health department, customs and inspection service. He adds that foreign competitors would be more than pleased to have the shipping board and merchant marine surrounded with more red tape. Instead, all bureaus dealing with shipping, he adds, now scattered through various departments, should be placed under a new department of marine.

"I am heartily in favor of a cabinet post creating a department or portfolio of marine and I advocate embracing in that department all the existing bureaus now assigned to various other

cabinet officers," he said. "For instance, why should the local inspector of hulls and boilers, a most essential department relative to shipping, and the customs service, also essential to ocean commerce, be entirely distinct and separate governmental functions? It is decidedly unreasonable and most emphatically expensive.

"The department of commerce has nothing to do with the merchant marine problem. It is interested in developing foreign trade. Its business is to strive to have cargo carried at the cheapest foreign rate. If we want to use the American merchant marine merely as a delivery wagon and pay the deficit by levying more taxes on our people, then the plan to sink the shipping board and the marine problem in the department of commerce is probably all right. But that is not the purpose of the nation. The merchant marine act provides that the government fleet shall pass ultimately into private ownership and under such ownership it must be operated to make money. It is absolutely inconsistent to submerge it in the commerce department and then expect it to become a real merchant marine operating on a paying basis. It is true that we need a lot of changes, but instead of being in the direction of the department of commerce they are needed in the opposite direction.

"All the functions pertaining to shipping, now scattered through many cabinet portfolios, should be concentrated in a department of marine. Then as a maritime nation we would have a chance to get somewhere. It is my belief that the group which wants to submerge the shipping board in the department of commerce is the same group which opposed the merchant marine act. I refer to the crowd that is connected in one way or another with foreign shipping interests."

Check Slump in British Shipping

Despite Barrier of High Costs and Slack Trade,
Recent Developments Show Upturn is Near

BY CUTHBERT MAUGHAN
Shipping Editor, *The Times*, London

IN THE last article in this series (February issue) some account was given of the experience of the British shipping industry in 1920. The review described the gradual downward movement of the industry from great prosperity to depression, and no encouragement was, or could be, given to any idea that a return to prosperous times was yet in sight. There is nothing mysterious about the shipping situation, which is controlled by hard economic facts from which there is no escape.

High freights were caused, mainly, by the ever reducing supply of tonnage during the years of war, and by an altogether abnormal movement of men, munitions of war, and commodities across the oceans. The demand for ships was greater than the supply. Consequently, the unchangeable law of supply and demand forced freights to a high level, or maintained them there, in spite of earnest efforts by governments to control them. Now, as the result of the plans feverishly laid during the war, the available supply of tonnage is greater by more than 10,000,000 tons than in the summer of 1914. At the same time, nations have been seriously crippled economically or have been put completely out of action, as far as the immediate resumption of oversea commerce is concerned.

In the years before the war, shipping companies were effective in creating or stimulating commerce. All the great liner services of today had small beginnings. By putting ships into new routes, new trades were established. While shipping companies in this way do much, they can not do everything. They can not make agriculturists work to produce the fruits of the soil, and they can not provide the dwellers in densely populated areas with the means of buying products of the open country. Never before has there been such a complete breakdown of the mechanism of commerce as has directly followed the Great War. Consequently shipping managers, however enterprising, have found their opportunities

of restoring commerce to prewar activity strictly limited. New services have been established, but many have met with poor support. Europe has been very sick indeed, and has been making only a very slow recovery. The United States and other great countries have had vast quantities of products to sell, but have found their wares beyond the straightened means of Europe to purchase. Never can there have been such a contrast between extreme activity in the shipping and ship-building industries of a year or two ago and the present depression.

Trade has always run in cycles, the average length of the good and bad periods being a matter which has provided economists with much study. Those cycles held their sway in years of peace or comparative peace and, therefore, they are of little value as a means of trying to gage how long the

present depression will last. There is still an enormous amount of work to be done in rebuilding Europe and in overtaking work which would have been done in five years of peace. Yet this work is postponed, because of the complete collapse of credit in various countries.

We may believe that we are in the trough of the depression, if only because conditions are so bad. In any case, pessimism could do little to bring about any improvement, while optimism could do much. We still seem to be in a period in which there is a wide breach between the costs at which commodities have been produced and the prices which buyers can now afford to pay.

This discrepancy has been seen in shipbuilding, as in other industries. Builders have completed new ships, only to find owners willing to part with them immediately at prices far below those which they paid for their construction. In some cases, buyers at almost any price have not been forthcoming, and ships have been taken straight from the builders' yard to protected waters where they can be laid up.

Laying up of tonnage on a large scale began some months ago, and now the total amount of tonnage laid up in the United Kingdom can not fall far short of 2,500,000 tons. These are primarily the ordinary cargo steamers, and, secondly, the cargo liners. The owner of the ordinary cargo steamer has no inducement to

keep his ship at sea if he does not see the prospect of a profit. The owner of the cargo liner will keep his ship in service as long as he can limit his losses to moderate amounts, so as to retain his connections. In its annual report lately issued the Liverpool Steamship Owners' association stated that by the end of last year the point had been reached when the shipowner had to contemplate a loss on almost every voyage he undertook. The Chamber of Shipping of the United Kingdom followed with the declaration toward the end

British Shipping Index PRICES OF REPRESENTATIVE SHIPPING SECURITIES IN FIRST QUARTER OF 1921

	Highest	Lowest	
Securities	£ s d	£ s d	Date
Cunard £1 shares	1 2 6		Jan. 6
Furness, Withy £1 shares	1 5 9	0 16 1½	Mar. 4
P. & O. deferred £100 stock	337 0 0	0 19 0	Mar. 1
Royal Mail S.P. £100 stock	297 0 0		Jan. 7
C. £100 stock	80 0 0		Mar. 10

SHIP CONSTRUCTION IN UNITED KINGDOM, FIRST QUARTER 1921

	Gross tons
Tonnage launched	433,000
Tonnage commenced	393,000
*Tonnage building March 31	
*Cancellations delayed compilation of this total.	

SHIPPING MANAGEMENT FACTS, FIRST QUARTER OF 1921

	Highest	Lowest
	£ s d	£ s d
Time Charter Rate: Ordinary British cargo steamers per ton d. w. per month	0 10 0	0 7 0
Voyage Rates:		
Plate—United Kingdom grain, per ton	2 0 0	1 12 0
Australia—United Kingdom grain, per ton	5 5 0	3 1 3
Cuba—United Kingdom sugar, per ton	2 0 0	1 15 0
Chile—United Kingdom Cont. nitrate, per ton	4 10 0	1 10 0
Fuel		
Coal: Best Welsh large at S. Wales, per ton	4 0 0	2 17 0
Oil: Per ton at Port Said	12 15 0	7 10 0
Wages: A. B. Seamen per month	14 10 0*	
Boatswains per month	18 0 0*	
Firemen per month	15 10 0*	
Assistant stewards per month	13 15 0	

*These rates are fixed by the National Maritime board, on which owners and seafarers are represented. They are now under discussion with a view to a reduction. The owners propose that the scale for the deck and engine-room departments should be reduced by £4 10 shillings per month and that the scale for the catering department should be reduced by £5 10 shillings per month.

of February that "under present conditions very little shipping is being run at a profit; on a great many voyages heavy losses have recently been incurred."

For liner companies the scarcity of cargo has been more serious than any decline in freights. Ships have been leaving the United Kingdom with only a fraction, and frequently only a small fraction, of their space occupied. So far relief has only been had from the lower price of bunker coals. As compared with £7 15 shillings, to which the price of best steam coal rose in London during March of last year, coal could be secured in March of this year for £3 per ton. That has been a very welcome reduction, although the present prices are far

Since the armistice very little progress has also been made in building ships of this type, because of the prodigious cost.

One of the largest liners built since the war is the ARUNDEL CASTLE, of 19,000 tons gross, which is now receiving her finishing touches from Messrs. Harland & Wolff at Belfast, Ireland, and is to make her maiden voyage to South Africa in the mail service of the Union Castle Co. on April 22. A sister ship, the WINDSOR CASTLE, was launched by the Prince of Wales at John Brown & Co.'s Clydebank yard on March 9, and is expected to be ready for service in the early autumn. Progress is being made with the new ships for the Canadian Pacific Ocean Services Ltd. There are three of these vessels now under construction on similar lines to that of the present "M" one-class, of which the MELITA, MINNEDOSA, and METAGAMA are already in service. New liners are also being built for the Cunard and P. & O. companies.

A few weeks ago, when the British government became seriously disturbed about unemployment, great efforts were made to fit a number of ships especially for the emigrant trade. This work was complicated by the idleness of the shipjoiners in this country and arrangements were made to send the ships to the continent, and especially to Antwerp. It soon became clear that there were difficulties in the way of countries overseas receiving many thousands of immigrants within a short time, and it was thought better to spread the departures over a comparatively long period. In any case, it seems clear that the passenger liner companies, whose fleets are not yet back to prewar proportions will be busily employed for some time to come.

Trade Routes Slack

Cargo liner companies have felt very seriously the falling off in trade. This has been very general and has applied to practically every route. The North Atlantic trade has been one of the quietest of all. Even before the war, there was comparatively little demand for space on the voyage from Europe, and lately, of course, exports from the United States have been on a small scale. Homewards from Australia, traffic has been maintained in large volume, which has meant that the immense stocks of wool in the United Kingdom have been still further increased. Lately, a demand for large quantities of Welsh coal for New Zealand has been welcome to the shipping companies which, but for this exceptional demand, would have had to send out ships nearly empty. Freight rates to India have lately been reduced by from about 5 to 10 shillings a ton, a result, mainly

of competition of foreign companies from continental ports. Were the volume of trade to expand and working costs to be lowered, a general reduction in freight rates would, no doubt, be considered practicable.

Managers of cargo liners have been especially concerned about the very great amount of pilferage of cargo which is still proceeding at ports throughout the world. Committees of merchants, shipping companies, and marine underwriters have been sitting to examine all aspects of the problem, and have made various recommendations. The merchants suggest that all traders should take particular care in the choice of the carriers, pointing out that some carriers by land and



SIR FREDERICK WILLIAM LEWIS, BART.

Newly elected vice president of the Chamber of Shipping of the United Kingdom. Sir Frederick is chairman of Furness, Withy & Co., Ltd., and of 20 associated shipping and insurance companies.

above the prewar level. Prices of all ship's stores should now gradually decline to a lower level, and the question of a substantial reduction of the wages of all employed in ships is now under discussion between the representatives of the shipping companies and the men, a round table conference in London of the National Maritime board having been adjourned from March 17 until April 22.

Following the classification of British ships which has been adopted in these articles, we find the mail and passenger liners in some ways less unfavorably affected by the present conditions than the other classes. That is because practically nothing was done to replenish the fleets of these liners during the war, all efforts being concentrated on the construction of simple cargo carriers.



SIR OWEN PHILIPPS, G. C. M. G., M. P.

Who has been elected president of the Chamber of Shipping of the United Kingdom. Sir Owen is chairman and managing director of the Royal Mail Steam Packet Co. and the Union-Castle Mail Steamship Co. and chairman of various associated steamship lines.

water deliver their goods in much better condition than others. The shipping managers direct special attention to the importance of tallying cargo at every stage through which it passes, and particularly on immediate discharge from the ships, and they also make special recommendations for the adequate guarding of docks and wharves. In the Port of London, a special police force has been organized under the auspices of the port authority and the shipping companies, and is believed to have been effective during the several months of its existence in bringing about a reduction of the evil.

Marine underwriters have decided to insure goods against the risks of theft and pilferage up to only 75 per cent of the shipping cost, this to be taken as the prime cost plus the costs incidental

to shipping and insurance charges, and they have also resolved to require merchants to give notice, in the event of loss, within 10 days of the expiry of the risk. This stipulation is required in order that the underwriters may have some opportunity of tracing the origin of the thefts and of taking preventative measures in future.

Unfortunately, there seems to have been a serious lowering of the standard of commercial morality during the past few years, and a great many claims have been presented which underwriters feel should be fully investigated. This has occurred not only in respect of merchandise, but also in the case of ships. As the result of board of trade inquiries, certain ships have been shown to have been thrown away, and in other cases the circumstances of loss have been of a suspicious character.

Cargo steamship owners, who are always the first to benefit from a rise in freights, have, as usual, been the first to feel the decline in the demand for space and the consequent heavy fall in freights. The autumn months, as was pointed out in the last article, did not bring about that recovery which was to be expected in the pre-war years when the great crops were ready for movement. There has been no stimulus to the demand for transport during the first quarter of this year.

Much was hoped from a substantial recovery of the British export coal trade, but high producing costs have been a deterrent. Shipping companies have been much interested in reports of the success of United States' firms in securing coal contracts which, in past years, have been held by British exporters. During the past few weeks there has been some increase in the demand for vessels to load grain, both at the north Atlantic and gulf ports of the United States, but when the freight offered for the United Kingdom declined from 8 shillings to about 6 shillings, 9 pence a quarter, British firms maintained that there was not sufficient in the rate to cover expenses. Some companies are known to have declined the rate, and one of two others declared that they had accepted it in order to bring their vessels home to be laid up in port.

Chartering More Active

A good deal of steady chartering has gone on from time to time during the past few weeks of vessels to load grain in the River Plate. As compared with the lowest rate touched during the previous quarter of 40 shillings per ton, the freight accepted has ranged lately from about 30 to

35 shillings a ton. Quite an active business has been done in tonnage to load grain in the ports of the River Danube, the freights paid ranging from about 26 shillings to about 29 shillings per ton for United Kingdom. Less has been accepted for Mediterranean ports. This chartering began in February, which was an unusually early time for such fixtures. This year, however, the winter was an unusually mild one, and owners were willing to take the risk of their vessels being stopped by ice.

Very little chartering of vessels for time has been done. A number of British steamers are understood to have been chartered in March at a rate of 7 shillings per ton deadweight per month, which compares with a rate of 10 shillings at the end of last year to which the quotation had fallen from 30 shillings at the beginning of 1920. Some of these vessels are understood to have been secured in connection with American coal contracts. Germany is believed to have been inquiring for steamers on time charter, but after the rupture at the conference in London in March, she is understood to have discriminated against British owned vessels.

Selling German Ships

In the unsatisfactory conditions which have prevailed during the past three months, the distribution among British owners of the ex-enemy tonnage allotted to Britain under the terms of the peace treaty has involved difficult problems. The total number of vessels allotted to that country by the reparations commission, including passenger and cargo steamers, sailing ships, and trawlers, is 301.

The work of disposing of these ships was intrusted to Lord Inchcape, who was very successful in disposing to British firms the large number of standard cargo steamers built for government account during the war. The sales of the ex-German steamers represented a far more difficult matter. British standard steamers were offered when freights were still high. The ex-enemy ships came to market when freights had fallen heavily.

The allotment of the vessels proceeded fairly steadily, but toward the end of March, when bidding became very quiet, the question of the future of the ships was brought to a head. There were some who thought that bidding for the ships might be opened to all the world, including Germany. This proposal was, however, contested in various quarters. It was admitted that Germany, by reason of the depletion of her mercantile fleet, might be in a better position to bid for the

ships than other countries. It was pointed out that the higher the prices bid the better for the reparation account of Germany, and that to allow the return of the ships to her solely on this question of price would be an outrage on the principles of the peace treaty.

Decide German Ship Policy

The question of the future of the ships was referred to the council of the Chamber of Shipping for opinion, and the council unanimously resolved that the ships should be sold to British nationals only, and that no resales should be permitted to foreign owners for a period of five years. At the end of March, 18 passenger steamers and 75 cargo steamers were being offered in this way. Bids are to be received until April 15. There were also 22 ex-enemy ships offered British nationals, allies, and neutrals.

Feb. 25 was an important day for the Chamber of Shipping of the United Kingdom. Throughout the day, shipping managers assembled at the famous Skinners' Hall in the city of London, and discussed the outstanding shipping problems of the day. The events included the election of Sir Owen Philipps as president for the current year, and of Sir Frederick Lewis as vice president.

Sir Owen Philipps is chief of the Royal Mail company, which is in April inaugurating a new passenger and cargo service between Hamburg and New York, with calls at Southampton and Cherbourg.

Sir Frederick Lewis is the head of the Furness, Withy line, which is well known in the United States for its transatlantic services.

In the evening the annual banquet of the Chamber was held, at which were present the Prince of Wales, the American ambassador, the president of the board of trade, the speaker of the house of commons, and many men eminent in the professions and the business world. Naturally, the speeches in the afternoon and evening dealt with the present unfavorable factors. Nevertheless, there was, especially in the presidential address, an undercurrent of encouragement. It was urged that since the normal life of a vessel is only about 20 years, and little has been done to dispose of old ships during the past few years, there should, in the early future, be a good deal of work for the shipbreaking industry. There was general agreement that working costs of every description must be reduced, and that when these expenses have been lowered and trade again becomes healthy, there should be much work for the shipping industry.

Repair Work to Aid Shipyards

Reconditioning of Vessels Now Idle Will Bring
Rush of Orders—Costs Are Sharply Reduced

SHIPBUILDING basic costs are declining. Practically all shipyards have now put into effect a reduction of 10 per cent or more in wages. In many instances the same reduction has been spread to salaries. But where salaries have not individually declined, the overhead has been materially reduced by eliminating positions in the executive offices. The reductions in wages and salaries have been effected without too great a disturbance although the wage reductions were not put into practice without some trouble with labor.

Materials are cheaper, which is another important factor in the industry. Plates today cost around 2.20 cents, Pittsburgh, while during March a year ago, plates were quoted as high as 4.00 cents, Pittsburgh. Steel prices were at their peak at this time last year, having reached a figure much higher than that prevailing during the period of the war or immediately after. In 1919, plates were quoted around 3.00 cents Pittsburgh. The war price was 3.25 cents.

Despite these reductions, little new business has appeared in the market. Some yards report starting work on miscellaneous small craft. Limited construction of harbor boats and ferries is scheduled, but steamship companies are holding back awaiting the pronouncement of a definite maritime policy by the new administration at

Washington. The eastern shipbuilders are encouraged, however, as they are anticipating that their reduced costs, resulting in declining prices for new ships, ultimately will appeal to the steamship owner. It has been forecasted that should the new scale not appeal to the shipowners another reduction in wages will undoubtedly be made about August.

Labor Costs Cut

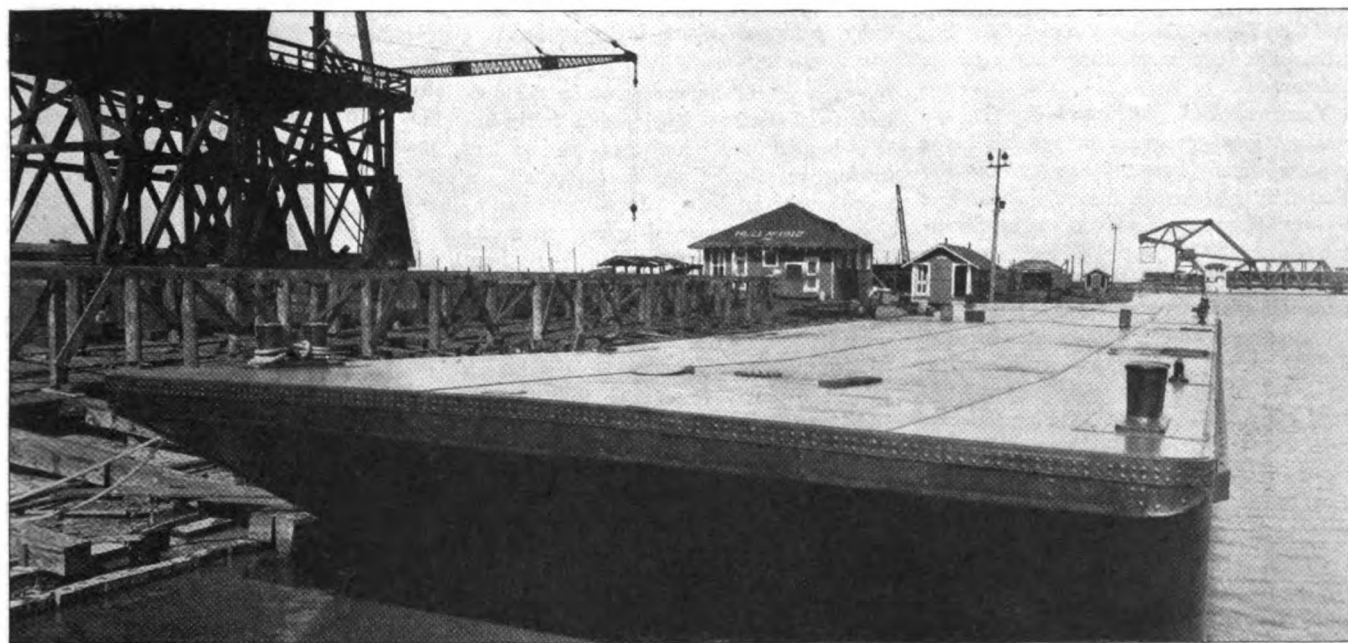
Shipyard wages are still much higher than wages in companion industries. Notwithstanding the expected objections of the unions, a reduced wage scale is to be expected with every decline in the volume of building. The Bethlehem Shipbuilding Corp. last month laid off some 400 men at its Harlan plant. Other yards are similarly restricting their forces. Hog Island is now in the hands of caretakers. The ship repair yards of the New York district have reduced wages 10 per cent and put into effect a reclassification of the crafts. This effects a saving of from $2\frac{1}{2}$ to 5 per cent. The repair yards in the Boston district have also reduced wages. The ship calkers were reduced 8 cents an hour and promptly initiated a strike.

Ship construction during February was the smallest since the war. According to the official records, only 19 seagoing vessels of 110,369 gross tons were officially numbered. Including

the nonseagoing vessels, a total of 121,404 gross tons of shipping was built in that month, which was below even the past December record. The February construction was nearly one-half the January figure. The March record was not much better, although the yards are anticipating considerable repair work. Repair work will increase from now on.

The American Bureau of Shipping reports on March 1 a total of 330 ships representing 1,434,246 gross tons were under construction, including 276 merchant craft of 998,834 gross tons contracted for private account. These figures vary from the totals issued by the commissioner of navigation who reports 227 steel vessels of 901,229 gross tons were building or under contract on March 1. The larger share of these contracts is held by the Bethlehem Shipbuilding Corp., Merchant Shipbuilding Corp., New York Shipbuilding Corp., Newport News Shipbuilding & Dry Dock Co. and Federal Shipbuilding Corp. On the Pacific coast, the greater part of the contracts is held by the Moore Shipbuilding Co., Northwest Bridge & Iron Co., and Southwestern Shipbuilding Co. Construction for the Emergency Fleet corporation is less than one third of the total of the contracts held by American shipyards.

Despite the tremendous slump in shipbuilding, it is a notable fact that



STEEL SEAGOING OIL BARGE CONSTRUCTED BY THE DOULLUT & WILLIAMS SHIPBUILDING CO.

the tonnage now building or under contract for private account alone is nearly three times as great as the total annual construction of the American shipyards prior to the war. This is a record not at all to be despised, for it shows the ability of the better established American yards to compete for the world's shipbuilding. During March, the keel of the last ship to be built for the account of the Emergency Fleet corporation was laid. This was in the yard of the Northwest Bridge & Iron Co.

With the ending of government work, American shipyards are aroused to the fact that they must make some desperate effort to obtain business. Today, no prohibition exists against the importation of foreign-built ships, except in the coastal trade. The amendment to the Panama canal act of 1914 removing all restrictions on the bringing under the American flag of foreign ships still remains upon the statute books of the United States.

This means that a foreign-built ship, intended for the overseas trade, may obtain American registry without regard to her age. And finally it means that American yards must compete with foreign yards if they intend to build any of the international merchant ships of the future.

The leaders in the American shipbuilding industry are of the opinion they will be able to meet foreign competition once conditions revert to normal. In the meantime, however, there must be a reversion to normal of foreign exchange, and a betterment in the ocean freighting business to demonstrate a requirement for new construction. But there is a slump in the shipping business as well as the shipbuilding field and managers are taking advantage of this opportunity to reduce their costs and make other economies. The slump in international shipping has lessened the demand for fuel and, therefore, the tanker demand today is not so brisk as for-

merly. The threats to restrict immigration are also discouraging the plans of different American lines to build passenger boats.

Some contracts have been let for municipal craft. A few yards are building small vessels for private account, or have accepted contracts during the past month. The bulk of the business is repair work. Reconditioning constitutes the most prosperous outlook for the immediate future. Approximately 30 per cent of the merchant tonnage of the United States has been tied up since last year as a result of the decline in shipping. The tie-up movement stopped in March and since then a few vessels have been brought out. The tie-up means deterioration and practically all of these ships must be reconditioned before they can be put back into trade. It is work of this class which is expected to swamp down upon the shipbuilders as the first appreciable recovery which will be felt in the industry.

What Pacific Shipyards Are Doing

BY R. C. HILL

THE 6500-ton motorship KENNECOTT, built at Tacoma, Wash., by the Todd Dry Dock & Construction Co., for the Alaska Steamship Co. recently underwent her trial trip with flying colors, 11 knots being done without effort. This vessel has been fully described by MARINE REVIEW. The KENNECOTT has been chartered for her maiden voyage to carry a cargo of 2,000,000 feet of lumber from Port Blakely to San Pedro. She is being handled by the Thorndyke-Trenholme Co., Seattle, who are negotiating an offshore charter.

Yarrows, Ltd., Victoria, B. C., are making good progress in repairing the express liner PRINCE RUPERT of the Grand Trunk Pacific Steamship Co. The PRINCE RUPERT was wrecked in Swanson Bay, B. C., Sept. 28, 1920 and lay submerged for many weeks. Yarrows took the repair contract on a time limit of 115 days and it is announced that the ship will return to service early in May. A new steering system has been installed and a similar system will be placed on the PRINCE GEORGE, sister vessel, as soon as the PRINCE RUPERT resumes the run between Seattle and Prince Rupert.

Unless new contracts are obtained in the meantime, it is expected that steel shipbuilding at Portland, Oreg., and Vancouver, Wash., will be at an end by July 1. The Northwest Bridge &

Iron Works, Portland, is completing several tankers and similar work is approaching an end at the plant of the G. M. Standifer Construction Co., Vancouver. According to report, the latter yard may take up railroad car building work. The site belongs to the port of Vancouver and according to agreement when work is finished the property together with improvements reverts to the port. It is assumed that every effort will be made to keep this splendidly equipped plant in operation.

Wooden ship builders on Puget sound report a recent improvement in the outlook as there has developed a fairly active inquiry for small gas fishing and towing vessels. Considerable small repair work is being done and indications point to renewed construction activity at many yards which have been practically idle for more than a year.

For service in the Arctic, the auxiliary schooner LADY KINDERSLEY was launched at Vancouver, B. C. March 26 from the ways of the British Columbia Marine Engineers & Shipbuilders Ltd. The vessel is 200 feet in length and of 635 tons gross. She is of particularly staunch construction to withstand the ice floes of the Far North where she will be used in trading. She is owned by the Hudson Bay Co.

The Grant Smith Co., Portland, has been awarded a contract by the port

of Portland for constructing a berth for the new drydock of the public dock commission. The figure is \$87,273.

The Dominion government and the creditors of the Prince Rupert Shipbuilding Co. are negotiating for an amicable settlement of the company's affairs. H. J. F. Turner, assistant manager of the Wallace Shipyards, Vancouver, B. C., has assumed charge of the Prince Rupert plant during the completion of the two steel vessels now partially constructed. John Maitland, formerly engineer in charge at the Coughlin yards, Vancouver, has also gone to Prince Rupert as engineer superintendent. The Prince Rupert drydock is now in commission.

About the middle of April, it is expected that the ammunition ship NITRO will be commissioned at the Puget Sound navy yard. Com. R. W. Vincent has arrived to take command of the NITRO. This ship and her sister vessel PYRO, each of 10,600 tons capacity, were built and launched at the Puget Sound yard. The PYRO went into service six months ago.

Built at a cost of \$25,000 and equipped with a 100-horsepower diesel engine, the fishing boat GRIZZLEY II has been launched by Schertzer Bros., Seattle, for Frank Nordland. This event closely followed the launching of the gas tug CREOSOTE for the Pacific Cre-

soting Co. by the Ballard Marine Railway Co. Both vessels will be used for general utility in local waters.

Some interesting testimony was given at Tacoma in the suit of A. R. Titlow against George P. Wright, owner of a wooden shipyard at Tacoma which built Ferris type vessels for the government. Mr. Titlow as Mr. Wright's attorney asked for a fee of \$20,000 alleging that he obtained a settlement of \$416,000 for the Wright yards from the shipping board. Mr. Wright contended that Mr. Titlow had nothing to do with the settlement. Among the witnesses was Judge R. A. Ballinger, formerly secretary of the interior, who testified that the fee asked was not excessive. Mr. Titlow, who is prominent in politics, was awarded \$7000. Mr. Wright is former mayor of Tacoma.

On March 17, the steel steamer SKIRMISHER, 8390 deadweight tons, was launched from the Wallace shipyards, Vancouver, B. C. The vessel was built for the Canadian government and is the last large craft under construction at these yards.

The CANADIAN TRAVELER, built by the Harbor Marine Co., Vancouver, B. C., has completed her trials and has started loading railway ties for her maiden voyage to Alexandria, Egypt.

Christened by a Boy Scout, Harold Adams, the tanker SWIFTSOUT was launched on March 12 from the ways of the Northwest Bridge & Iron Works, Portland. The Boy Scout idea was that of Raymond Desmond, Cranford, N. J., whose father Charles A. Desmond, a naval architect, had charge of construction.

British Columbia shipbuilders are closely watching the proposal to increase the Dominion tariff on steel plate from \$3 to \$7, as the increase will have material bearing on the future of yards on the Canadian side.

After completing the construction of a 15,000-ton wooden floating drydock, in five pontoon units for the public dock commission at Portland, the shipbuilding firm of Cornfoot & McIntosh will shortly be dissolved and its property disposed of at auction. This includes the plant of the Albina Machine & Engine Works which built several steel steamers for the government during the war.

Suit has been filed in the United States district court at San Francisco by the Australian commonwealth to foreclose mortgages for \$1,625,000 on eight wooden motorships sold to the Pacific Motorship Co., known as one of the companies in the W. L. Comyn

interests. Appointment of a receiver is asked pending the outcome of the action. The vessels involved are the BALCATT, BENOWA, BOOBYALLA and BABINDA, built by the Patterson & McDonald yards, Seattle, and the COOLCHA, CETHANA, CHALLAMBRA and CULBURRA, constructed by the Sloan yards, Olympia, Wash. They were originally ordered for the Australian government but were acquired by J. E. Chilberg, Seattle, who later turned them over to the Comyn interests. Recently they have been operated between British Columbia and

Puget sound and west coast of South America.

The federal court at Seattle has reopened the case of the Sloan Shipyards Corp. against the Emergency Fleet corporation in which damages amounting to \$3,500,000 were asked because of cancellation of contracts. The court had previously dismissed the action but granted a motion to set aside this decision that an amended complaint may be filed. This action is supposed to be preliminary to an appeal to the Supreme Court.

Gulf Yards Are Active

Shipbuilding Plants Take Up Repair and Small Boat Work

GETTING back to peace business after the hurry and expansion in work and profits during the war has been a serious problem for the shipbuilding companies along the Gulf coast, but at least three of them in New Orleans have solved the problem. They are operating with full forces and have files well filled with orders. These companies have turned their yards into ship repair plants, and into works for constructing seagoing steel barges, steel deep sea tugs, and coasting steamers of shallow draft. Other companies along the Gulf coast which have not been able to make this change, or have not seen the wisdom of doing it, are having considerable difficulty in finding sufficient work to keep their employees together.

The first New Orleans company to take up the construction of smaller craft was the Johnson Iron Works, Dry Dock & Ship Repair Co., which constructed several 100-ton seagoing steel tugs for order of the government at its yard on the Bayou St. John, and is now engaged in building steel barges for the Mexican oil trade. This company also operates a drydock and ship repair plant on the Algiers side of the river.

The Doullut & Williams Shipbuilding Co. Inc., which built a fleet of eight 9600-ton steel steamships for the shipping board, completely outfitting them at its plant on the inner harbor and navigation canal, launched the last of this fleet, the OLDHAM, on March 19. Four of the eight ships have been delivered, complete, to the shipping board agents at New Orleans, having been taken around over Lakes Ponchartrain and Borgne and thence up the Mississippi to the Louisiana port. The other four are being outfitted for early delivery.

While the last of these ships was on the ways, the Doullut & Williams company began construction of a num-

ber of large steel seagoing barges for use in transporting oil on the Panuco river and across the bar at its mouth, at Tampico, Mexico. Two or three of these barges were launched by April 1 and more are on the ways. The Doullut & Williams company also is going into the construction of seagoing tugs, and coasting steamers.

The Jahncke interests, which operated a yard for the construction of wooden ships at Madisonville, some 30 miles across Lake Ponchartrain, during the war, are investing approximately \$1,000,000 in a large drydock and ship repair plant on the Mississippi river within the city limits of New Orleans. In addition to drydocking and repair work, this plant also will construct tugs, barges and small steamers.

The small boat construction field is being well cared for by the New Orleans Boat Building Co., in which A. Duvic & Sons are the largest owners, and which is building power work and pleasure boats and repairing those in service.

The Southern Yacht club has started the organization of a co-operative boat repair and construction yard, to be located on the grounds of the club at West End, New Orleans, to take care of the fleet of 300 or more power boats which fly the S. Y. C. pennant.

The oil tanker, TUXPANOL was launched recently from the south plant of the Baltimore Dry Docks & Ship Building Co., Baltimore. The sponsor was Mrs. Roe Edwin Wells, a niece of William H. Todd, president of Todd Shipyards Corp. The TUXPANOL is a 10,300 deadweight ton tanker; 430 feet in length, 59-foot beam; 33 feet 3 inches in depth; 2650 shaft horsepower; single screw; geared turbines; with a speed of 10 knots; equipped with three Scotch boilers; oil burning; forced draft. She has a cargo capacity of 3,000,000 gallons.

Marine Exhibitors Unite

Organized with a membership of 159 companies, the Marine Equipment Manufacturers association was brought into being at a meeting held at the Hotel McAlpin, New York, on March 28. The association, designed primarily to control the holding of marine expositions in the future, is intended to include not only all those manufacturing marine equipment, but shipbuilders, shipping companies, insurance agents and those engaged in selling ship supplies, and naval stores. While recognizing the merit of joining in movements to advance the interests of an American merchant marine, the association decided to have as its main object the staging of marine shows upon a strictly co-operative basis and thus greatly reduce the cost to the exhibitors.

The affairs of the new association will be placed in the hands of an executive committee selected to represent the various sections of the country. This committee is to be composed of 18 men, 6 of whom will serve for one year, 6 for two years and 6 for three years. All executive committeemen chosen later will be elected for a term of three years and be barred from re-election. Permanent officers for the year 1921 were elected as follows: President, E. A. Simmons, president, Simmons-Boardman Publishing Co., Woolworth building, New York; vice president, W. H. Todd, president, Todd Shipyards Corp., 15 Whitehall street, New York; and secretary treasurer, K. L. Ames, Jr., American Steel Foundries, McCormick building, Chicago.

The executive committee elected and districts from which chosen follow:

New England District

E. B. Williams, manager marine department, B. F. Sturtevant Co., Hyde Park, Boston.

F. L. Andrews, vice president, Hyde Windlass Co., 2 Federal street, Bath, Me.

New York and New Jersey District

M. L. Katzenstein, manager marine department, Worthington Pump & Machinery Corp., 115 Broadway, New York.

W. M. McFarland, manager marine department, Babcock & Wilcox Co., 85 Liberty street, New York.

H. C. Davis, vice president, Row & Davis Engineers, Inc., 90 West street, New York.

Frank Hatch, vice president, Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.

H. R. Sutphen, vice president, Sub-

marine Boat Corp., 11 Pine street, New York.

Pennsylvania, Maryland, Delaware, District of Columbia, Virginia and West Virginia District

G. W. Selby, secretary-treasurer, Marine Decking & Supply Co., 116 North Delaware street, Philadelphia.

J. C. McQuiston, director of publicity, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

William Stayton, president, Baltimore Steamship Co., 662 Lexington building, Baltimore.

W. P. Smith, William Cramp & Sons Ship & Engine Building Co., 100 Broadway, New York.

South Atlantic and Gulf States District

Paul Jahncke, of Jahncke Dry Dock & Shipbuilding Co., New Orleans.

Great Lakes District

F. C. Bradbury, manager marine department, Crane Co., 836 South Michigan avenue, Chicago.

J. D. Sarles, manager marine department, Pyle-National Co., 30 Church street, New York.

H. L. Hibbard, manager marine department, Cutler-Hammer Mfg. Co., 50 Church street, New York.

J. H. Redhead, advertising manager National Malleable Castings Co., 7706 Platt avenue, Cleveland.

Pacific Coast District

W. M. Wampler, eastern manager, Coen Co., 50 Church street, New York.

H. F. Alexander, president, Pacific Steamship Co., Seattle.

Rename Munson Liner

SOUTHERN CROSS will be the name of the second new 21,000-ton displacement passenger ship which the Munson Steamship lines will place in the South American run. As originally planned, this ship was to be named SEA GIRT, in honor of the state of New Jersey, but the change of name was arranged as more befitting to the north and south run into which the ship is to be placed. The AMERICAN LEGION, a sister ship, has also been allocated to the Munson line by the shipping board for the South American services. These two vessels will be operated in conjunction with the MARTHA WASHINGTON, HURON and AEOLUS.

The port strike is at present delaying the MARTHA WASHINGTON at Buenos Aires. In view of this trouble, it is probable that the CALLAO will once again be withdrawn from her anchorage at Hog Island and placed in the South American run temporarily. The Munson Steamship lines are scheduling a sailing every two weeks with this fleet.

Amendments to Seamen's Act Proposed

Lake interests opposed to the La Follette seamen's act met at Detroit April 8-9 and adopted a plan of action to secure the modification of restrictive provisions of this law. Representatives were present from a large number of lake cities and included vesselmen as well as delegates from chambers of commerce and general business industries.

Proposed amendments to the seamen's act, which have been found particularly inimical to lake vessels, were submitted and approved. The thread of the discourse showed a conviction that the seamen's act as applied to the Great Lakes is "strangling industry in the middle west and threatening to drive the lake carriers out of business." Among the chief objections raised is to the provision compelling lake shipowners to maintain watches on vessels while they are tied up in port, and placing an excessive number of life boats on lake ships, which, experience has shown, take up so much room that the number of passengers must be reduced.

The Charcoal Iron Co. of America, Detroit, forwarded a letter which showed that this firm under the terms of the seamen's act had found it necessary to employ three coal passers on its vessel although none of the men had performed any work whatever since 1915, because coal was fed automatically on the vessel.

At the closing session, the proposed amendments were submitted and approved. This draft will be submitted to congress and active support of the amendments will be given by the majority of the lake interests. Opposition to the law has taken concrete form in recent months as a result of the decision of several passenger lines to discontinue services which the act has made continuously unprofitable for several years.

Capt. John G. Crowley, Brookline, Mass., died recently at 65 years of age. Captain Crowley organized the Coastwise Transportation Co. some 20 years ago for transporting coal from Hampton Roads to Boston and other points in New England. He built the 7-mast schooner THOMAS W. LAWSON, largest of the type, and the GEORGE W. WELLS, first 6-master, as well as other vessels for coastwise service.

Patterson, Wyld & Co. resumed their former Boston-Manchester service, with the sailing of the shipping board steamer DALLAS on April 5.

Service to India

Reference made to the placing of the steamer CITY OF MARSEILLES in the service between New York and Indian ports, via the Suez canal, by the American & Indian line in the March, 1921, issue of MARINE REVIEW may have given the impression that this is a new service. The line has operated a passenger service over this run since April, 1916, commencing with the steamer CITY OF MANCHESTER. The CITY OF MARSEILLES was built for the Eller-

man & Bucknell Steamship Co., Ltd., London, in 1912 and designed especially for the service between England and India. This vessel was diverted to the New York run last winter and sailed from New York for India on Jan. 26, last.

Norton, Lilly & Co. are the New York agents for this line, which schedules a sailing approximately once a month. After leaving New York, the first call is Port Said, Egypt. A typical schedule of sailings may be had from the recent announcements.

The CITY OF HARVARD sailed April 18, the CITY OF SPARTA sails April 30, the TRAFFORD HALL sails May 15 and the CITY OF YORK sails June 15. The CITY OF HARVARD and the TRAFFORD HALL carry first class passengers only, while the other two ships carry first and second class passengers. The run from New York to Bombay is made in four weeks. The CITY OF MARSEILLES, which is one of the best ships of the fleet, and most recently added to the run, measures approximately 10,000 gross tons, and is a twin-screw steel steamer.

Big Yacht Launched at Lake Yard

THE steam yacht DELPHINE was launched at the River Rouge, Mich., yard of the Great Lakes Engineering Works on April 2. She has the greatest known tonnage in yacht construction, being 250 feet on the water line, 258 feet over all with 35 feet 6 inches beam and 14 feet 8 inches draft. She displaces 1700 tons. Her unusually large oil fuel capacity gives her a cruising radius of about 7000 knots. She was designed by H. J. Gielow, New York, for the late Horace E. Dodge, Detroit.

The big yacht has five decks, orlop, lower, main, saloon and boat or upper deck. The orlop deck is given up almost entirely to storage. On the lower deck forward, the forecabin has 24 berths for crew. Immediately aft are the principal quarters for the ship's officers, including staterooms, bath rooms, lavatories and a large mess

room, all furnished in butternut. Further aft are two galleys taking up the entire width of the ship. Next are the engine and boiler rooms, while the remainder of this deck is occupied for its length of 82 feet with guests' quarters, consisting of nine staterooms and six private baths.

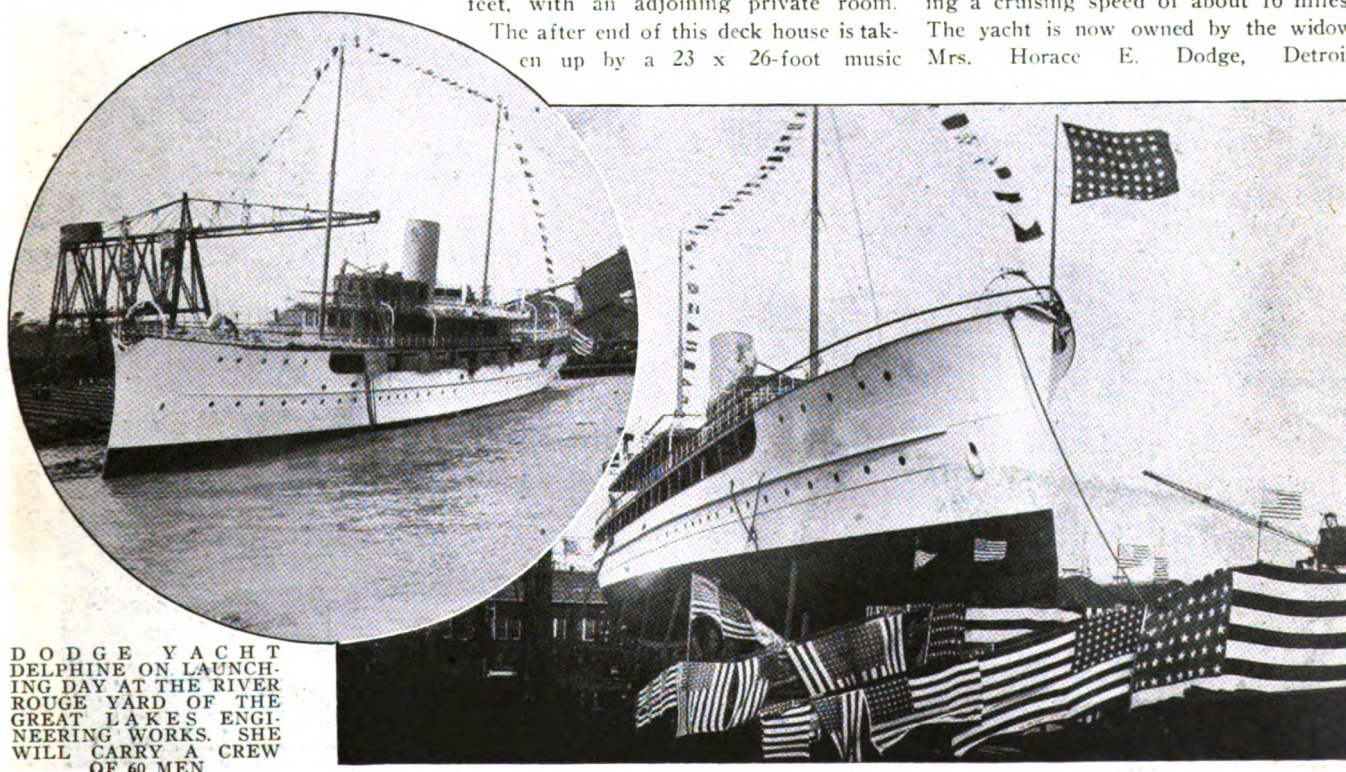
The main deck quarters forward consist of a raised forecabin head, in which are located accommodations and staterooms for the crew and officers. Other quarters on the main deck are located in two large steel deck houses. These quarters include the pantry, the 22 x 24-foot main dining room with hand-carved woodwork, engineers' staterooms and a stateroom for a physician. The forward end of the after main deck house is occupied by boiler fidley, storage battery, ventilating rooms and laundry. Further aft is the owner's stateroom, 17 x 25 feet, with an adjoining private room.

The after end of this deck house is taken up by a 23 x 26-foot music

room, which includes a carved organ screen, fireplace and valuable paintings. A large lounging space is aft of the main deck house.

On the saloon deck which extends the full length and full beam of the ship is located amidships a steel deck house, 15 x 108 feet. Accommodations include a smoking room, captain's stateroom, captain's office, card or tea room and organ loft. The boat or upper deck extends for the full length of the saloon deck house and is carried out to the ship's side to form a fixed awning. Located forward is a paneled teak house forming the pilot house and chart room and wireless room.

The propelling machinery includes three boilers fitted for burning oil fuel designed for a working pressure of 250 pounds and two quadruple expansion reciprocating engines, designed to develop 1500 indicated horsepower, giving a cruising speed of about 16 miles. The yacht is now owned by the widow, Mrs. Horace E. Dodge, Detroit.



DODGE YACHT DELPHINE ON LAUNCHING DAY AT THE RIVER ROUGE YARD OF THE GREAT LAKES ENGINEERING WORKS. SHE WILL CARRY A CREW OF 60 MEN



FIG. 14—LOOKING DOWN THE ASSEMBLING BAY WHERE THE ENGINES ARE PUT TOGETHER AND GIVEN A BLOCK AND RUNNING TEST

Building Diesel Marine Engines

Accuracy Is Assured by the Use of Jigs and Special Tools — Cylindrical Grinding Is Employed Extensively to Expedite the Production

for Seagoing Vessels-II

Engines Are Given a Thorough Running Test After Assembling to Make Sure That They Function Properly and Develop Rated Power

BY FRED B. JACOBS

MARINE engine building is a branch of the machinists' trade calling for a high degree of skill that is developed only through many years of practical experience. Men employed in engine building, taken as a class, show a gratifying interest in their work. They realize that if the parts of a marine engine are not properly constructed disaster at sea may result, for if the engine fails to function properly when the ship is running through a heavy seaway, the life of every man aboard is at stake. This is true especially of 1-engine vessels.

Executives of the Busch-Sulzer Bros.—Diesel Engine Co., St. Louis, realizing these facts, many years ago began to build an efficient shop organization so that defects in workmanship would become almost unknown. Rigid inspection of every part takes place both during and after machining operations, in order to make the finished product as near perfect as possible.

The main machine shop is modern in all respects. It is provided with ample natural lighting facilities, which eliminate practically the necessity of artificial lighting, except during the winter months. The machine tool equipment is up to date and so arranged that plenty of floor space is provided. Thus a large number of engines can be in process of construction at one time.

Heavy machining is done on the main floor, while lighter machining operations and the assembling of comparatively light units is carried on in a large central gallery extending the entire length of the shop. The object of this article is to describe briefly several of the more important

machining operations. The methods followed on diesel engine work, compared with those in use in building steam engines, differ greatly in one respect. On diesel engine work, grinding wheels and grinding machinery are relied on to insure accuracy and to expedite production. On regular work on marine steam engines the use of abrasive wheels for finishing operations is almost unknown.

Bed Plate Made in Sections

The bed plate is made in sections, as this practice insures a complete unit free from excessive internal strains. The first machining operation on the bed plate is to rough plane the several sections. The ends that are to form the joints then are carefully roughed and finished. The necessary bolt holes next are drilled and reamed

and the sections fastened together. The assembled bed plate then is finish planed on the bottom, after which the seats for the main bearing caps are carefully finished. Stud holes for the bearing caps next are drilled and tapped, the studs put in place and the bearing caps assembled. These have been previously planed to a good fit. Liners are interposed between the caps and bed plate for the purpose of making adjustments as wear develops.

The next operation is to bore out the seats for the main bearing shells. This is an exacting operation, for, if they do not align properly, the journals are sure to heat unduly. Fig. 33 shows the base plate in place for boring. For this work a massive horizontal boring mill is used. The bed plate rests on a cast iron floor-plate provided with a number of T-slots to expedite strapping the work in place.

As shown, the bed plate rests on parallel blocks and is securely strapped in place by means of U-straps, hard wood blocking being placed at the rear end of the strap. Four straps, two on a side, hold the bed down, while four shore jacks, two on each side, keep the setting accurately in line during the boring operation. In setting the bed plate in place, care is exercised to make sure it sets level with the floor plate. This is readily determined with a surface gage. The bed plate is aligned horizontally by tak-

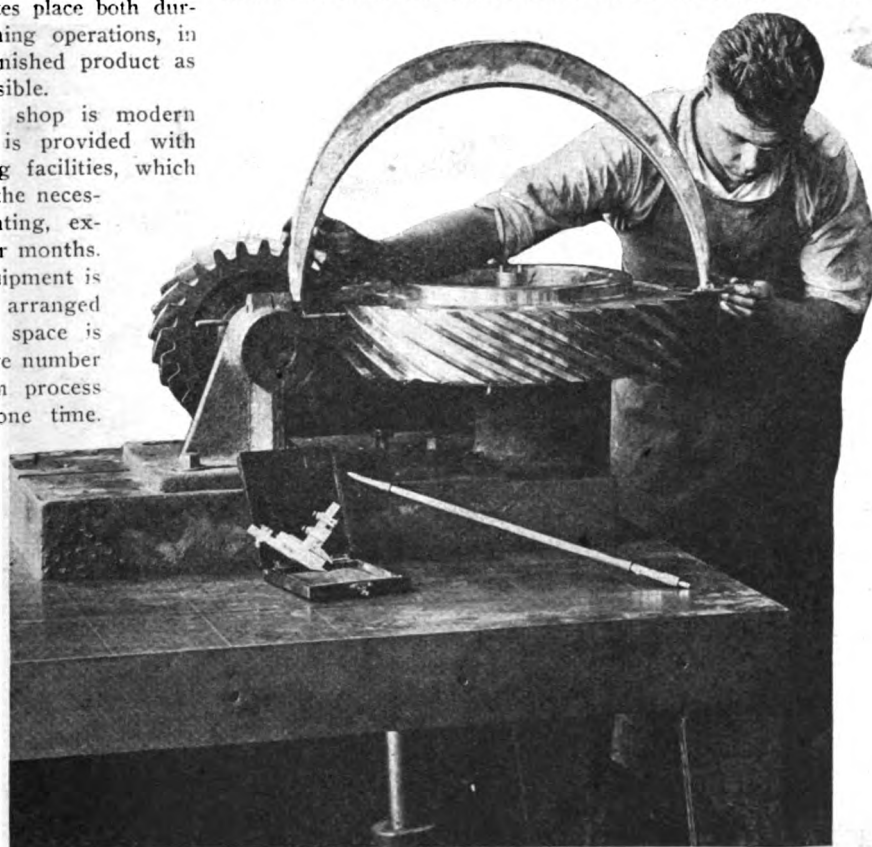


FIG. 15—GEARS ARE CAREFULLY TESTED WITH MICROMETERS

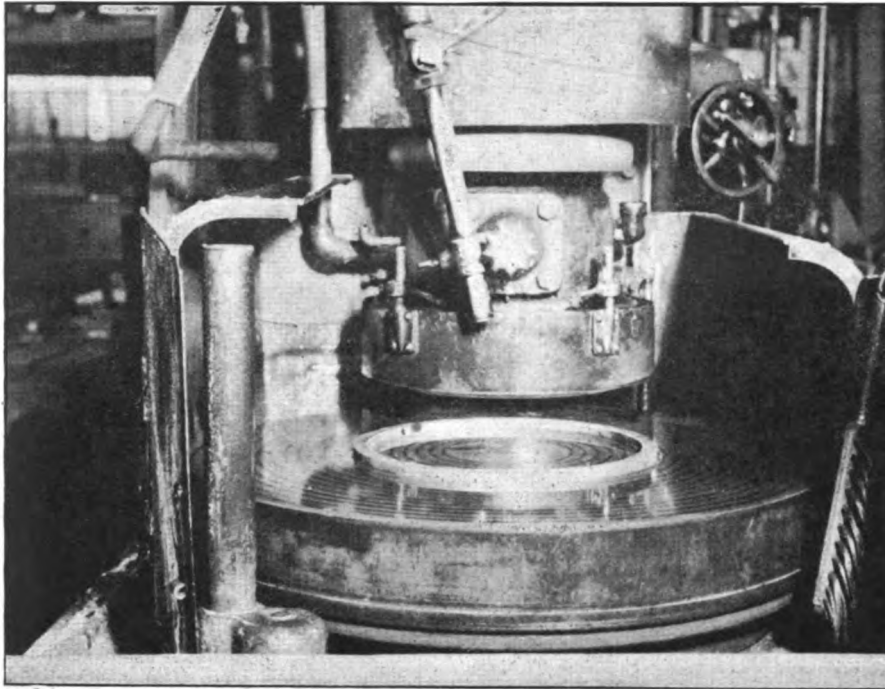


FIG. 16—SIDES OF PISTON RINGS ARE ACCURATELY FINISHED BY GRINDING

ing micrometer measurements between the boring bar and the vertical planed surfaces that locate the bearing caps.

With the bed plate properly aligned, the caps are securely bolted in place with liners under them and the boring operation begun. In Fig. 33 it is shown that an outboard bearing is provided for the end of the boring bar, while another intermediate support is located between the second and third bearings from the right. Three to four chips are necessary to finish the holes accurately, after which facing tools are set in the bar and the ends of the bearings carefully faced. It is necessary to face the ends accurately as they bear on the flanges of the main bearing shells. Thickness of the bearings is determined with micrometer calipers. The bores also are finished with extreme accuracy. This insures interchangeability of parts.

Bores Scraped to a Bearing

As stated, the bored holes in the bed plate accommodate the main bearing shells. To make sure that the shells will fit snugly and withstand the strain of continuous operation without working loose, the bored holes are carefully scraped to fit an aligning bar. This bar is accurately finished by grinding. Scraping these holes may seem an unnecessary operation; but it must be borne in mind a hole finished by machining methods presents innumerable high spots. These high spots would break down under the continual thrust of operation and cause a "sloppy" fit with the

bearing shell. This would soon lead to a serious main bearing pound. Scraping leaves a dead smooth surface on which no loose iron is present

and consequently makes a permanent fit.

The main bearing shells are cast steel, lined with bearing metal. They are made in halves and provided with liners between the sections for the purpose of adjustment. In machining the shells, the surfaces forming the joint are planed first. The sections then are drilled and reamed for dowel pins. They are firmly held together while being bored and turned. Then they are dovetailed to anchor the bearing metal in place. The bearing metal is poured and is anchored by means of the dovetail grooves. Flanges on the bearing shells are faced on the lathe to accurate micrometer dimensions, while the surface that is to bear in the bored and scraped hole in the bed plate is finished by precision grinding. This insures extreme accuracy.

Uses 3-Part Crankshaft

Crankshafts are made in three sections, as shown in Fig. 36, from hammered forgings, material dimensions and design conforming to Lloyd's specifications. The first operation on each section is to center it carefully and to rough turn the main bearings, face the flanges and

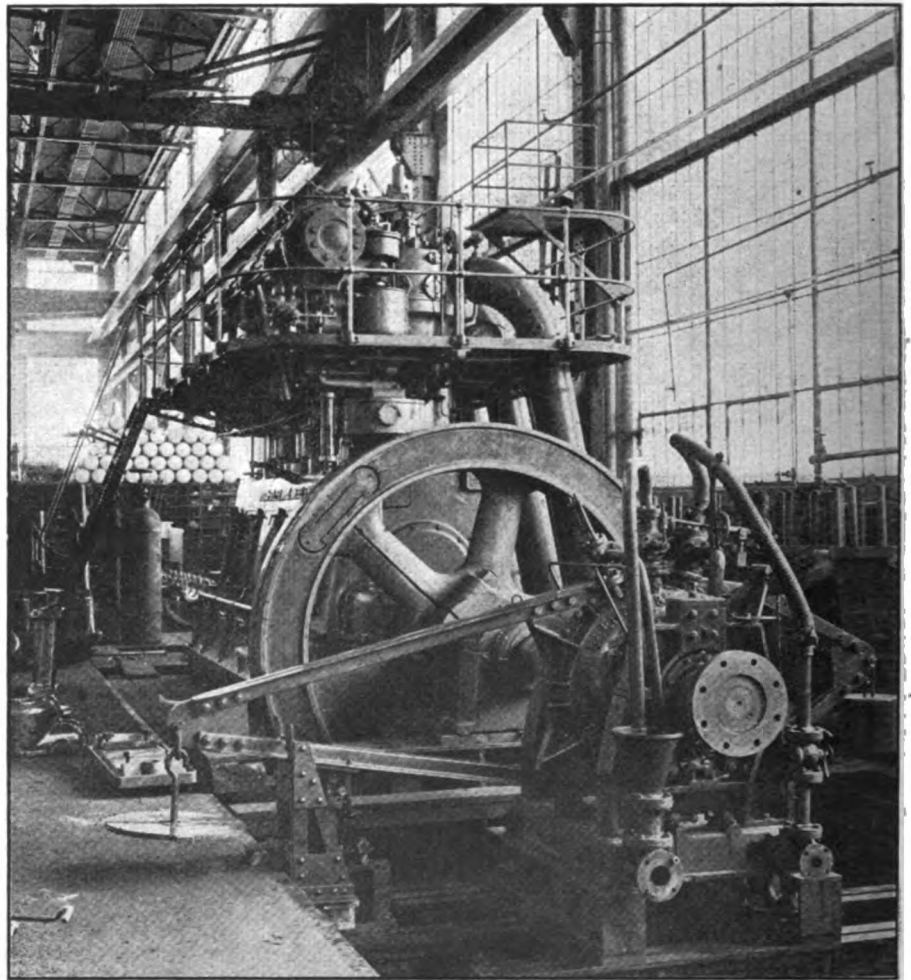


FIG. 17—APPARATUS USED IN DIESEL ENGINE BLOCK TESTING

the sides of the crank webs. The flat surfaces on the webs then are planed. The section next is mounted on offsets and the crank pin roughed and finish turned and the inside of the webs faced. The offsets used in locating the shaft section are accurately made so that parallelism between the pins and main journals is assured. This is necessary, as otherwise the crank pin boxes could not be set up properly which would result in a crank-pin pound after the engine had been in use a short while.

The next operation is to drill and ream the flange holes, after which the shaft is assembled. It is then mounted in a lathe between centers, the main journals carefully finished and the ends faced. As all the journals are finished at one operation, it is obvious they will be concentric with each other. The work is held within close limits and carefully sized with micrometers. The shaft is tested with an indicator to make sure it runs true within reasonable limits. If the shaft runs out of true several thousandths of an inch the error is corrected. In the majority of cases, however, the shafts show up dead true.

The crankcase is rigidly bolted to

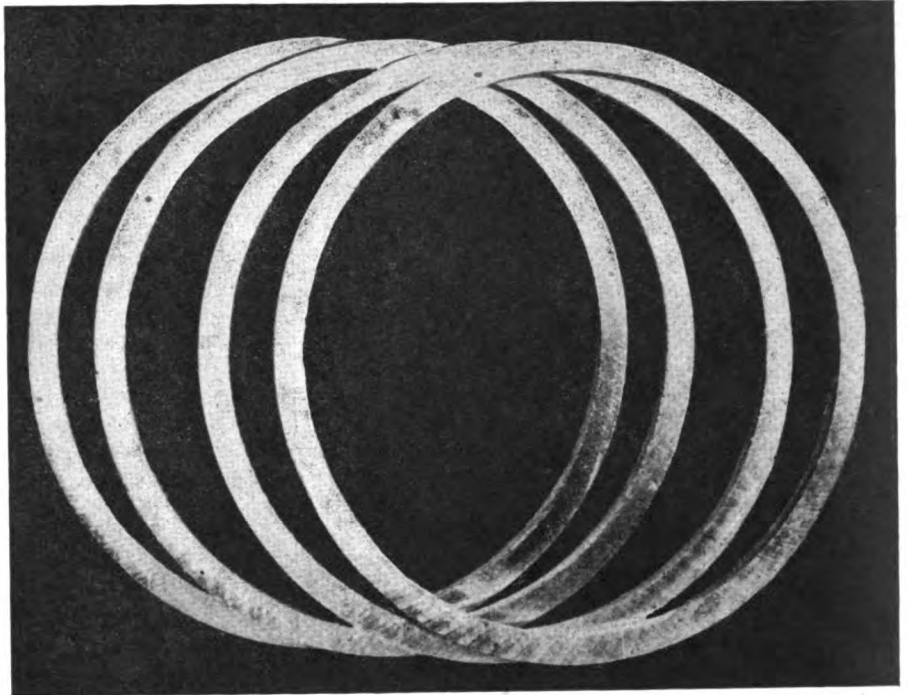


FIG. 19—GROUND PISTON RINGS ASSURE ACCURATE FITTING

the bed forming the connecting link between this unit and the cylinders. It takes the place of the frame in an ordinary marine engine. This unit is

made in sections which are carefully planed to insure good fits. After the sections are fitted together, the top and bottom are accurately planed and the holes for the hold-down bolts drilled and reamed. There are comparatively few machining operations on the crankcase aside from those mentioned. The machining must be done carefully, however, as this unit must be both oil and gas tight.

Cylinders are made in two parts, an outer jacket that is rigidly bolted to the crankcase and a liner that forms the running barrel. The object of this construction is to save expense in case of repairs. It is a much more simple and inexpensive procedure to draw an old liner and substitute a new one than to rebores a cylinder. The cylinders proper are bored on vertical boring mills. The object of using a vertical boring mill is to machine the cylinder in the same position it assumes in the assembled engine. The first operation is to rough bore the cylinder bore and counter-sink depression at the top that accommodates the flange on the liner. Then the cylinder is turned over and the bottom faced. Next it is carefully finish bored to an exact fit for the liner. Cylinder boring operations are shown in Fig. 35.

The cylinder liner is machined also on the boring mill. This unit first is rough bored and turned, followed by finishing cuts on both inside and outside surfaces. Care must be exercised in this operation as the liner must be perfectly round and finished within close limits. A cylinder liner

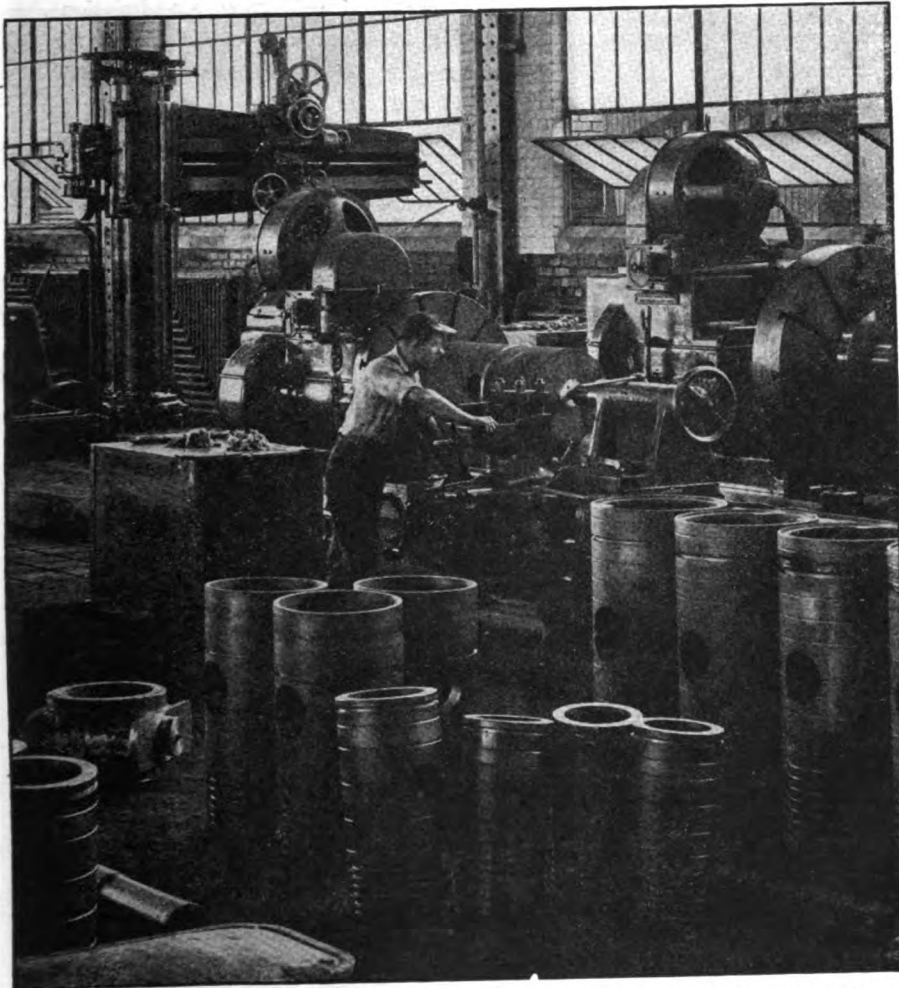


FIG. 18—PISTONS ARE ROUGHED OUT ON THE LATHE BEFORE GRINDING

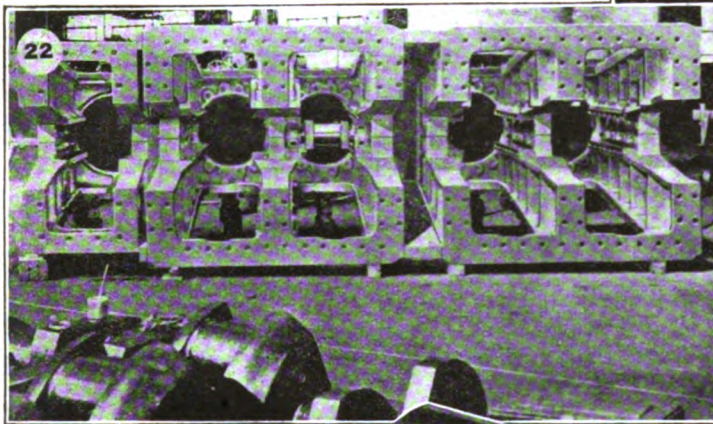
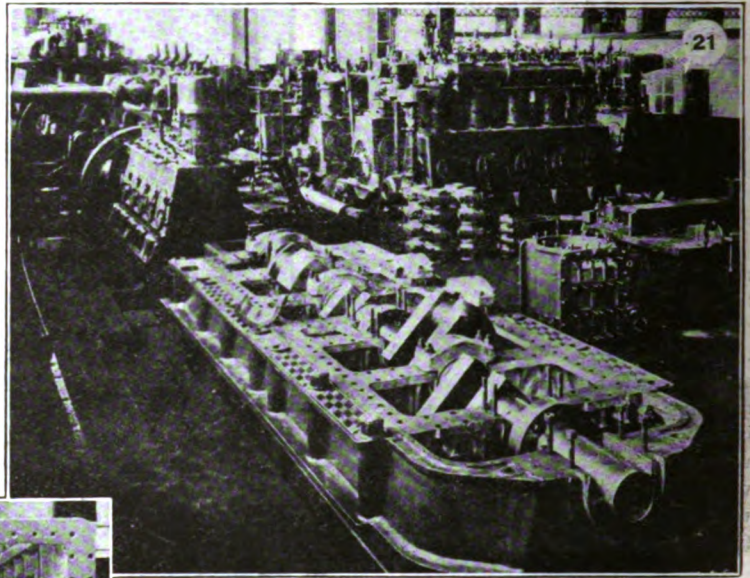
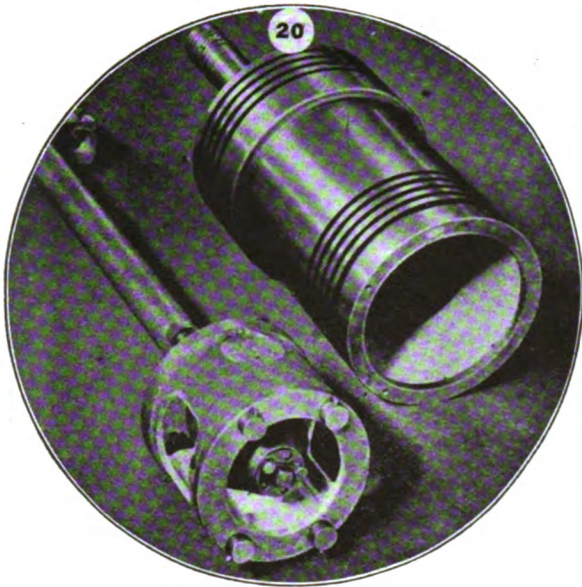
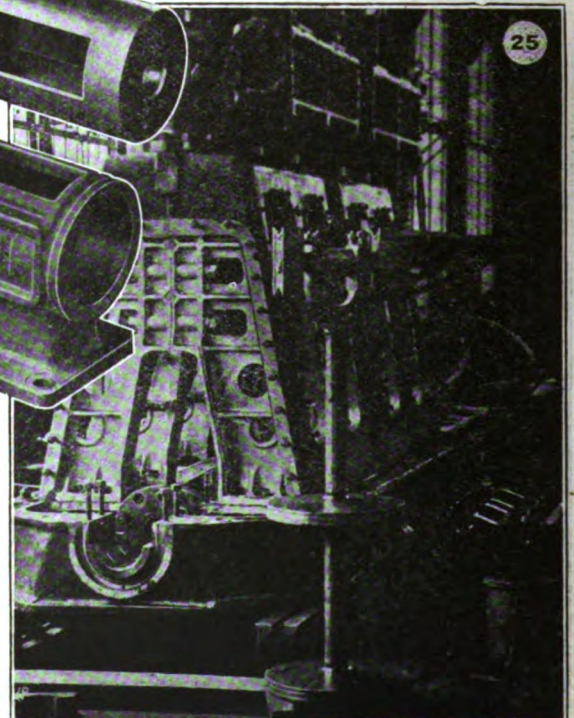
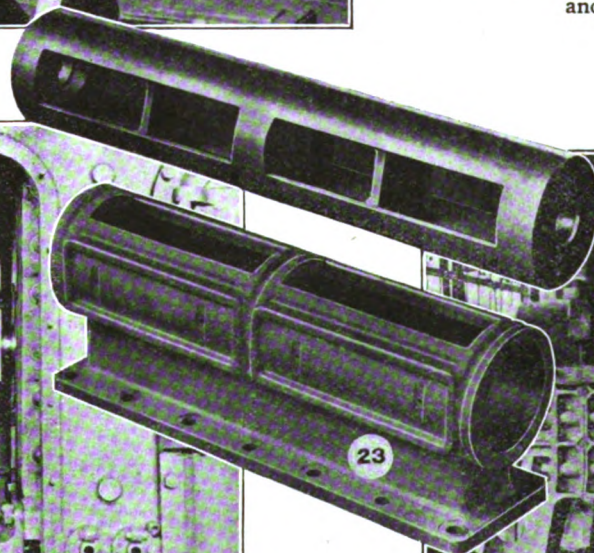
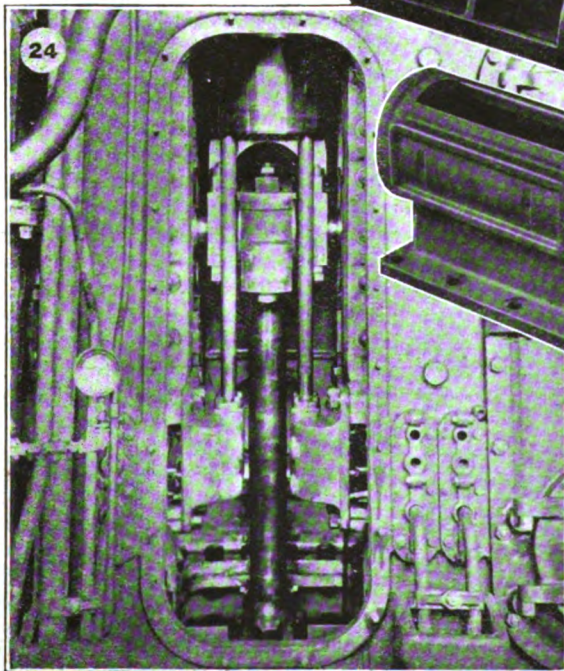


Fig. 20—Air compressor piston and connecting rod—Fig. 21—Crankshaft assembled in bed plate—Fig. 22—Bottom view of crankcase—Fig. 23—Rotary air-admission valve—Fig. 24—Rear view of connecting rod assembly—Fig. 25—Scavenger pump pistons and rod and end view of crankcase and bed plate assembly.



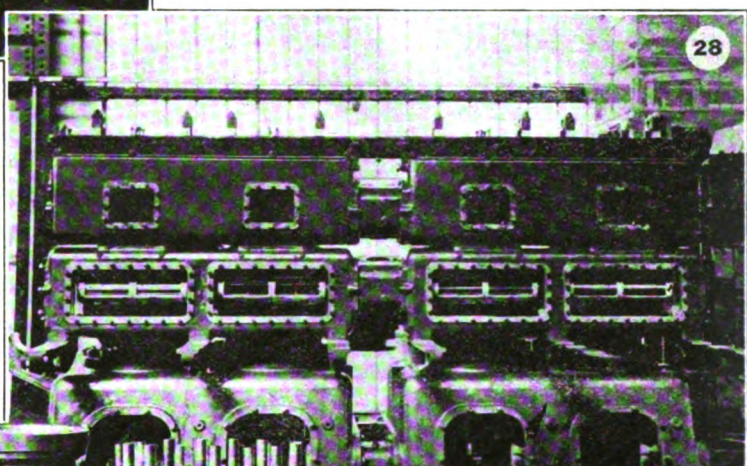
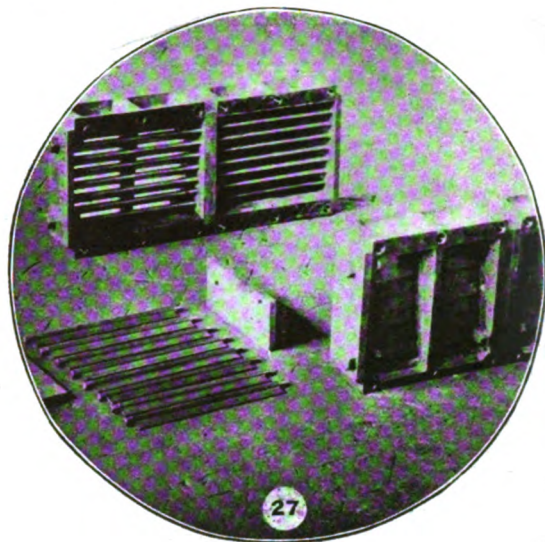
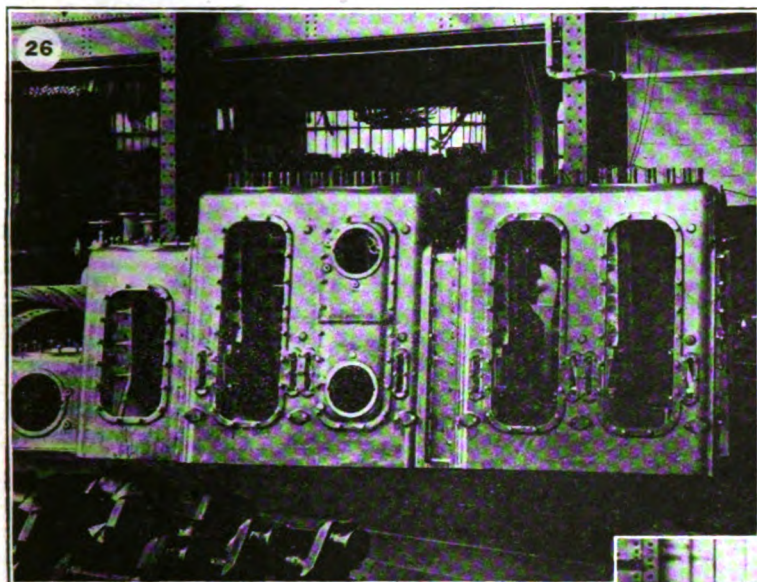
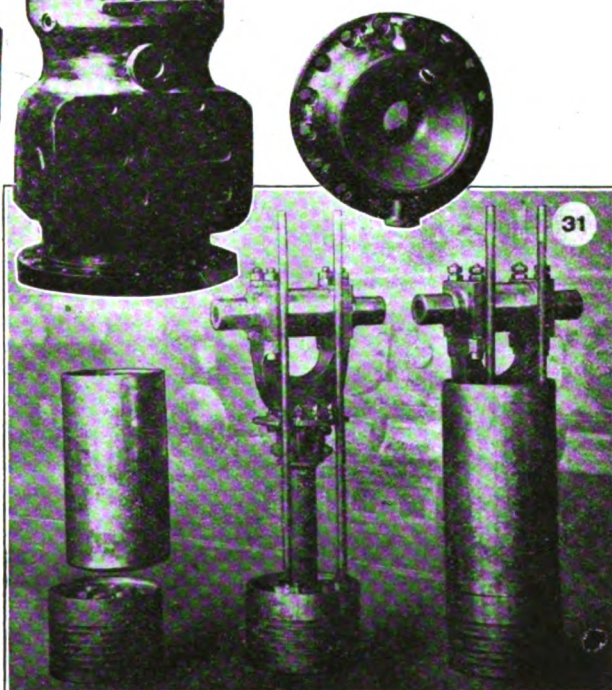
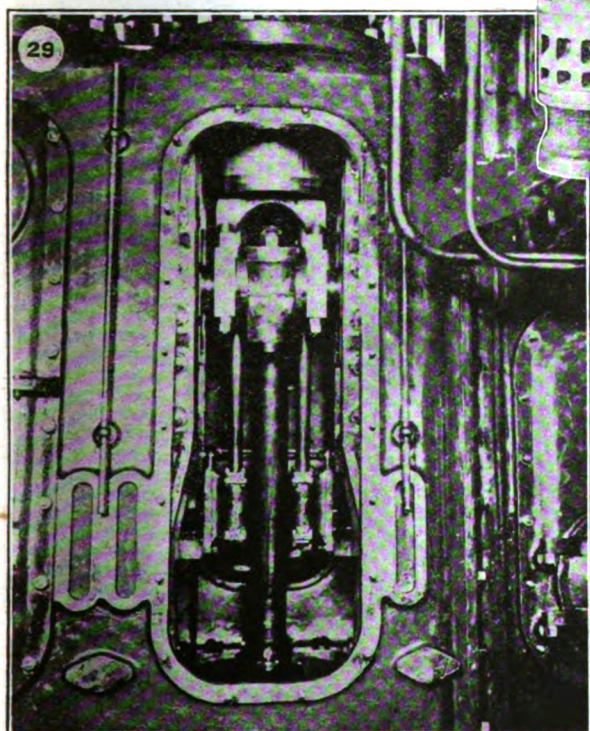


Fig. 26—Sectional construction of crank-case—Fig. 27—Automatic shutter-type connecting rod assembly—Fig. 28—Cylinder rotary valve chest—Fig. 29—Front view of connecting rod assembly—Fig. 30—Cylinder liner, cylinder jacket and cylinder head—Fig. 31—Piston and piston-rod assembly.



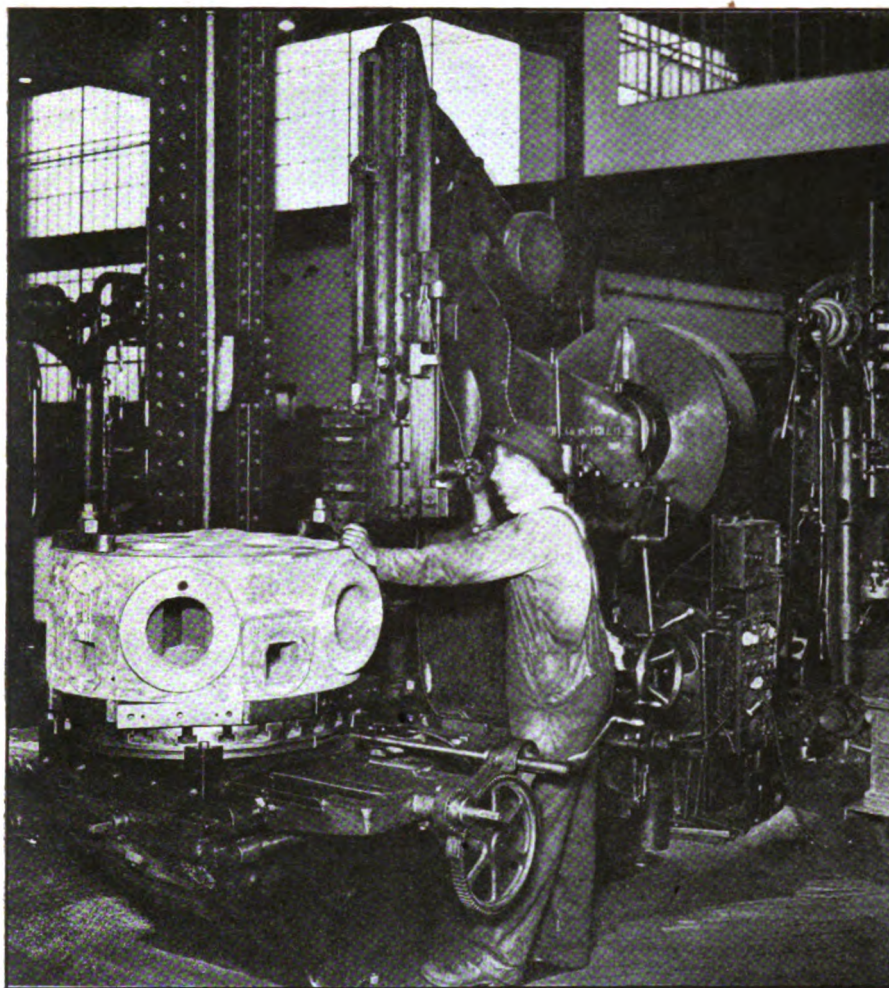


FIG. 32—PLANING THE SIDES OF A CYLINDER HEAD ON THE SLOTTER
TOP AND BOTTOM ARE FINISHED ON A BORING MILL

is shown in the foreground of Fig. 35.

Cylinder heads are cast iron, machined at the bottom to fit the cylinder, while several bosses are faced off on the top. The top and bottom are finished on the boring mill, while several planing operations on the sides are done on the slotter as shown in Fig. 32. After the turning and planing operations are complete, the holes for the hold-down bolts are carefully drilled and reamed by means of a jig. This assures accurate duplication of parts so that a new head can be fitted at little expense.

Combustion Chamber Is Scraped

After the machining operations are complete, all scale from the inside of the head in the combustion chamber is scraped away by hand and smoothed with abrasive cloth. This is an expensive operation but, as a smooth surface results depositing of excessive carbon, which is the cause of premature firing, is reduced to a minimum.

The piston for 2-cycle engines is made in two parts, a head that carries the rings and a skirt that fits the cylinder jacket. These two sections are roughed out on the lathe, the grooves for the rings turned, and, after fitting together, are finished by grinding. A piston grinding operation is shown in Fig. 37. Pistons for 4-cycle engines are made in one piece. A piston turning operation is shown in Fig.

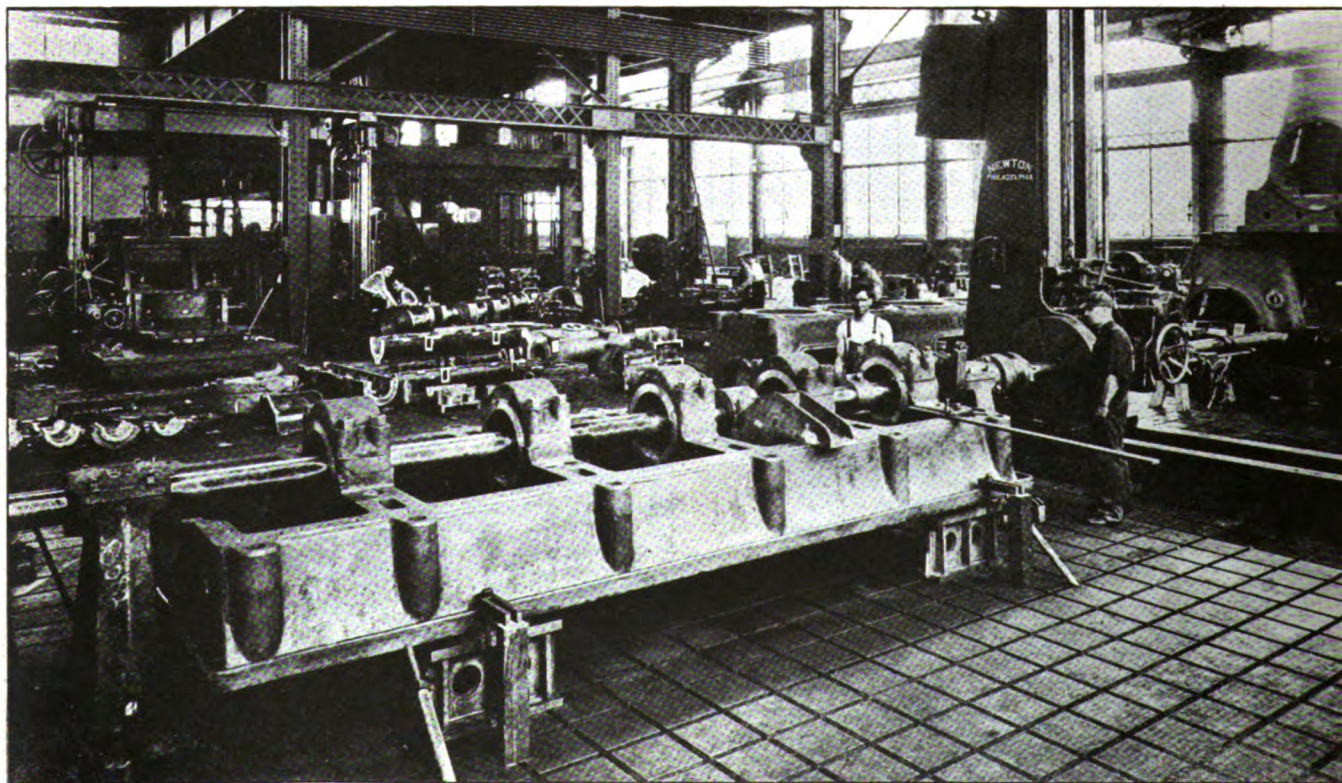


FIG. 33—BORING A CRANKCASE FOR THE MAIN BEARINGS ON A HORIZONTAL BORING MILL

18, where several partly finished pistons are seen in the foreground. The first operation on these pistons is to locate the casting in a chuck where a seat is turned at the lower end which is used in locating the part in subsequent finishing operations. The piston then is located as shown in Fig. 18, where it is carefully turned, leaving a liberal allowance for grinding. Next the grooves for the rings are machined. The hole for the piston pin is bored and reamed in a horizontal boring mill, after which the piston is ready for finishing by grinding.

Grinds Piston Rings

Piston rings are cast iron, accurately finished on the sides to fit the grooves in the piston. The rings are bored and turned and cut off in the lathe from a pot casting. Next the joint is milled and fitted. The joint is held together by means of a small dowel pin, while the sides of the rings are accurately ground as shown in Fig. 16. This method assures the sides being parallel within close limits. The next operation consists of finishing the outside of the ring to an accurate fit with the cylinder. In this operation several rings are located on one fixture and ground at one setting.

Piston rods for 2-cycle engines are hammered steel forgings, roughed out in the lathe and finished by grinding. This is a simple operation followed by methods known to every mechanic. Care must be exercised, however,



FIG. 35—BORING CYLINDERS ON VERTICAL BORING MILLS

in machining these parts to make sure that the head of the piston rod that bolts to the piston is accurately machined square with the body of the rod and that the part that fits the crosshead also is machined accurately

Connecting rods are hammered forgings with marine type crosshead and crank ends. The rods are turned and the ends squared in the lathe, while the inside of the forks are usually finished on the slotter. Care is exer-

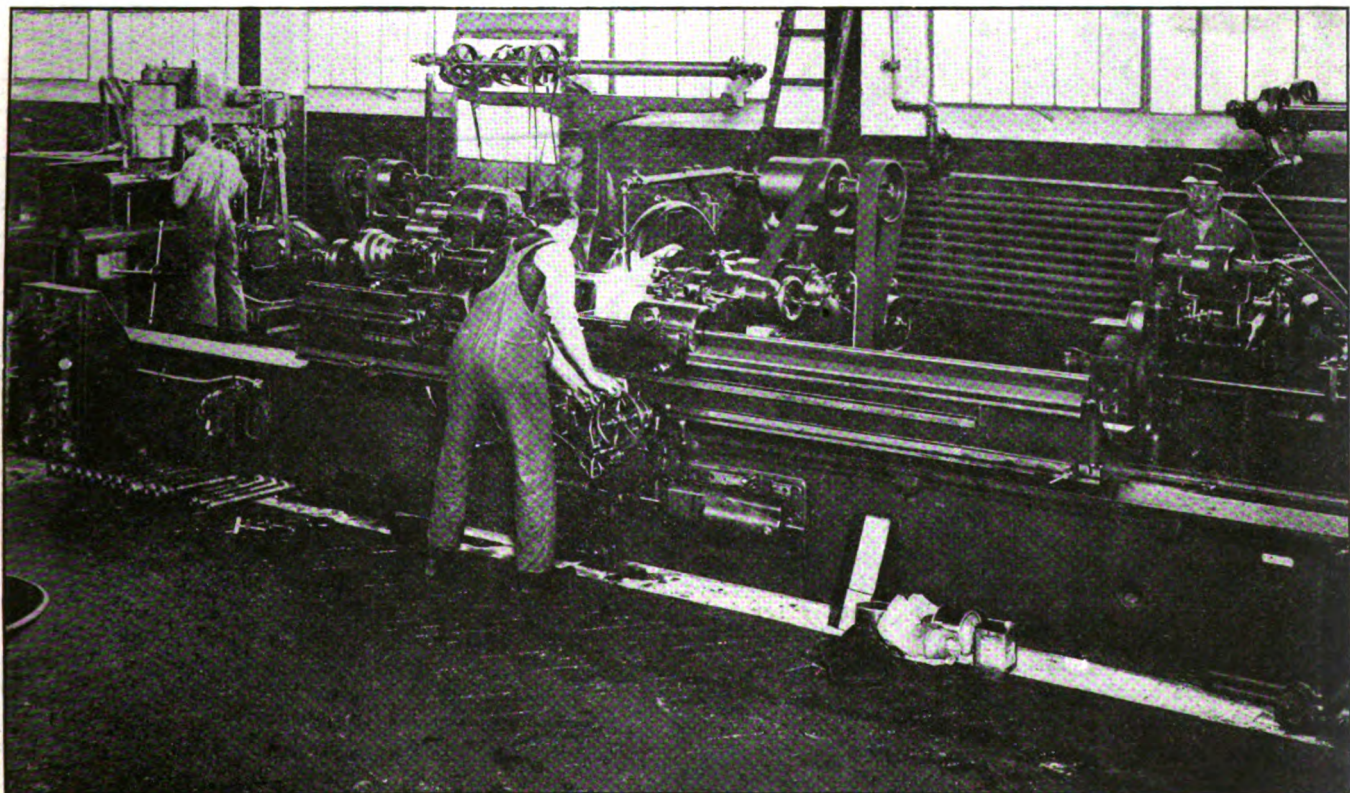


FIG. 34—LARGE PLAIN GRINDING MACHINES ARE USED FOR ACCURATELY FINISHING CYLINDRICAL PARTS

cised to make sure the surfaces to which the crosshead pin and crank pin boxes bolt are square and parallel. Otherwise unnecessary shimming would be necessary, when the engine is assembled.

Connecting rod boxes at both ends are cast steel, lined with bearing metal. These boxes are planed square, after which they are bored for the bearing metal. The bearing metal is anchored in place by means of machined, dovetail grooves. The grooves usually are planed in the slotter. After the bearing metal is cast in place, the holes for the pins are carefully bored and scraped to a bearing. Boxes are in two parts between which liners are in-

operation on these bolts is shown in Fig. 34. By grinding these units, accuracy is assured as the body of the bolt acts as a dowel pin to locate the parts accurately in place.

The camshaft, which carries the cams for operating the valves, is driven through the medium of helical gears at the lower and bevel gears at the upper end. These gears are carefully cut so that they will function with minimum friction. Fig. 15 shows how the helical gears are tested to make sure they are within predetermined limits. A special fixture is used to determine if the center distance is correct, while the outside diameter and depth of tooth is carefully measured

The cylinders then are put in place and the pistons and piston rods assembled and bolted to the crossheads. Other assembling operations consist of placing the cam shaft and its driving shaft in place, adjusting the cams, putting the lubricating system in place and trimming up the engine for the first test which is a block test as shown in Fig. 17. The fully assembled engine is run on this test for several hours to make sure that it is functioning properly and generating its rated horsepower. After the block test comes a long running test to determine if the engine is running without heating its bearings. This is an important test and well worth the time

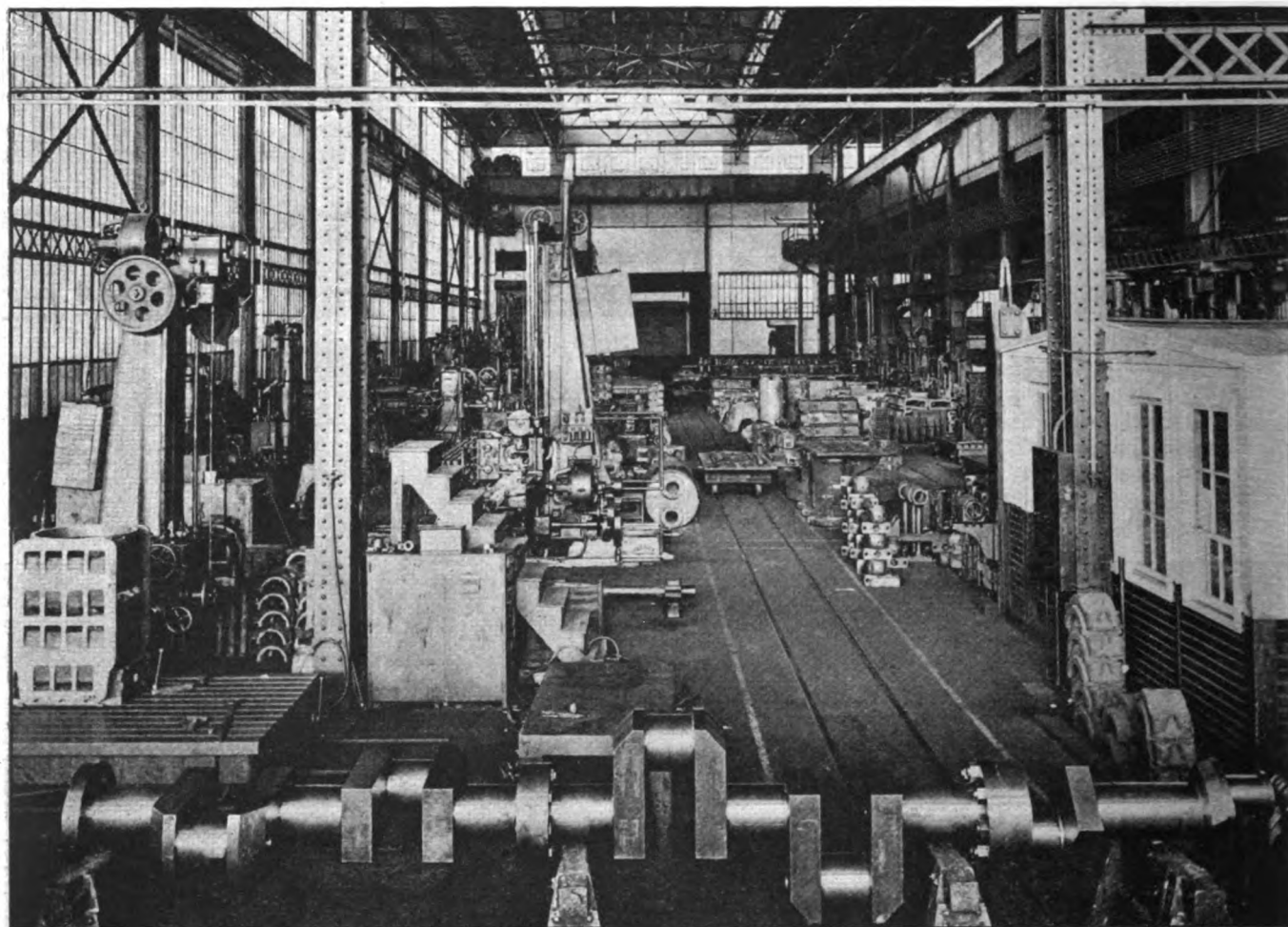


FIG. 36—LOOKING DOWN ONE OF THE MACHINING BAYS—UNIT IN THE FOREGROUND IS A 4-CYLINDER ENGINE CRANKSHAFT

terposed to provide means for adjustment.

Cross head pins are steel forgings. They are roughed out in the lathe and finished by grinding. The crosshead is a steel casting carefully planed to size and lined with bearing metal on the slides. After the bearing metal is poured in place, it is planed and scraped to an accurate surface. Hold-down bolts are steel forgings turned in the lathe and finished by grinding. A grinding

with micrometers. A gear-tooth vernier caliper also is used in taking measurements of the teeth.

In the assembly operation, the bed plate is set in place first and carefully leveled. The crankshaft then is set in place and the bearing caps assembled. The lower connecting rod boxes and connecting rods then are assembled in place on the shaft. The crankcase is then lowered in place, lined up and bolted together.

consumed for it discloses errors in alignment which may be located and remedied. The engine is partially dismantled for shipping. Generally the bed plate and crankshaft assembly is shipped as one unit. The crankcase also is shipped as a unit. Cylinders and other parts are shipped separately.

Arrangements are being made by the United Fruit Co. to operate more steamers in its Boston service.

Launch Big Cruiser

Second of three scout cruisers being built for the United States navy by the Todd Dry Dock & Construction Co., at Tacoma, Wash., the MILWAUKEE was launched successfully on March 24. The MILWAUKEE follows the scout cruiser OMAHA which took the water last December. The third vessel of this type now on the ways will be ready to launch in May.

The sponsor was Mrs. Rudolph Pfell Jr., Milwaukee, delegated by the mayor of the Wisconsin city for this honor. Mrs. Pfell brought out a bottle of Lake Michigan water and after this had been broken across the vessel's stern,

secretary. At the banquet following, the sponsor was presented with a diamond and platinum wrist watch. Like the OMAHA, the MILWAUKEE was launched bow first, the reasons for this being economy and dispatch in construction.

Rapid progress is being made at the Todd plant in completing and outfitting the OMAHA and the work of finishing the MILWAUKEE will also be rushed. An extended technical description of these fast scout cruisers has already been published by MARINE REVIEW.

SAN UBALDO, third of four oil-tankers being built by the Standard Shipbuilding Corp., Shooters Island, New York, for the Eagle Oil Transport Co., Ltd.,

the steering engine and tiller motor, boring and rebabbiting the two main brasses. The repair was made during the 48 hours in which the steamer was discharging cargo at her wharf at San Pedro. One boiler was repaired at a time, permitting steam to be maintained for unloading work.

SWIFTS-COUT, the fourth of the seven 12,000-ton steel tankers being built by the Northwest Bridge & Iron Co., Portland, Ore., was launched March 12. These tankers are being built for the Swiftsure Oil Transport Co.

The New York-New Jersey port development bill proposing a treaty for de-

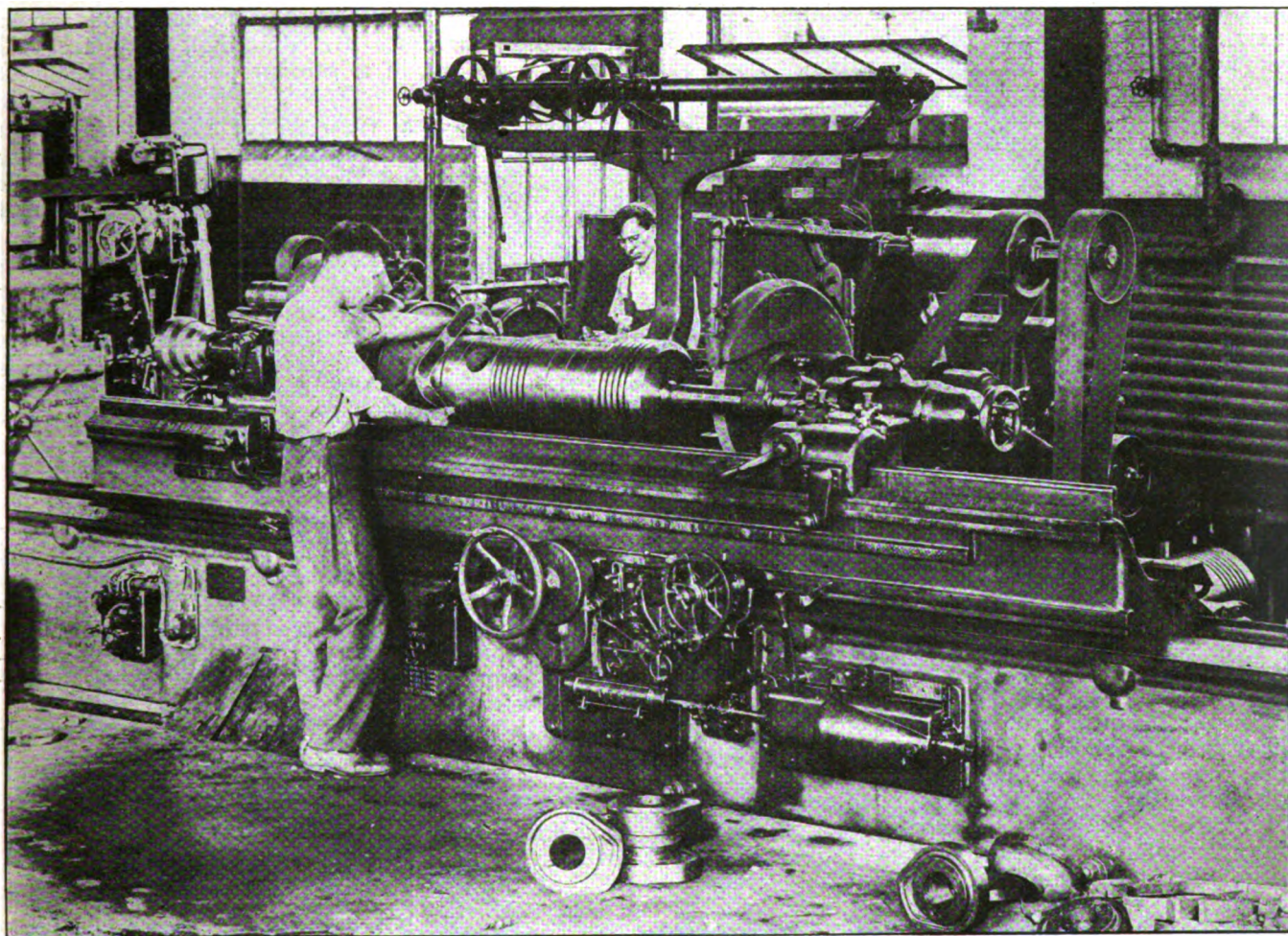


FIG. 37—GRINDING A LARGE PISTON TO SIZE ON A CYLINDRICAL GRINDING MACHINE—THE WORK IS ACCURATELY TESTED WITH MICROMETERS

a bottle of champagne completed the christening ceremony.

William H. Todd, head of the Todd plants, came out from Brooklyn, N. Y., to witness the ceremony bringing with him Mayor Patrick Griffin, Hoboken, N. J. Local Todd officials were present including C. W. Wiley, president and H. W. Kent, treasurer of Todd Dry Docks, Inc., J. A. Eves, vice president of the Tacoma plant, H. E. Coleman and Edward Nugent, respectively treasurer and

London, was launched March 5. She is a 8400-deadweight ton tanker, 427 feet long, 53 feet 5 inches extreme breadth, 31 feet molded depth with a speed of 11 knots.

The Los Angeles Shipbuilding & Dry Dock Co., Los Angeles, Cal., recently completed a rapid repair job on the steamer KATHRYN LUCKENBACH. The work consisted in replacing 132 tubes in the steamer's four boilers, repairing

veloping the area of the port of New York and for establishing a port authority passed the assembly of the New York legislature on March 16.

The marine exposition planned by the National Marine league for New Orleans May 2 to 7 has been postponed.

The shipping board steamer ABSECOM has been placed out of commission at the port of Boston.

World Charter Market Reviewed by

TRADE IMPROVES

Revival of Business at Different Ports Brings Upturn in Shipping—Some Idle Tonnage Set to Work

IMPROVEMENT in the ocean shipping field is near. A change from the expensive slump has set in and a better understanding is being effected between rival interests. American shipping has been awaiting impatiently the appointment of a new shipping board and the definition of the maritime policies of the new administration. The hope is entertained in many quarters that ultimately the government will resort to a system of subsidies and an abolition of government ownership. Primarily for this reason many of the private companies are holding on a little longer. In the meantime, peace has been made in the very expensive rate war in the French Atlantic and rates on those runs have been materially advanced.

Attention is necessarily drawn to the abnormal amount of idle tonnage. But idle tonnage is not exclusive to the United States. One financial survey reports that 822 American vessels, including 286 wood ships, are tied up. This means that more than 30 per cent of the shipping board vessels are idle. British vessels are tied up in equal proportion, but in the case of the Norwegian tonnage the situation appears to be even worse. A total of 300 Norwegian ships are idle, according to report, representing some 700,000 tons. But during March, the shipping board issued orders to withdraw 8 ships, representing some 82,000 deadweight tons, from tie-up and assigned them to operating companies. This fact alone would seem to indicate the turning of the tide in the American market.

In the meantime, steamship operators have endeavored to follow the lead of other nationals in reducing wages. A wage reduction of 20 per cent on New York towboats has precipitated a strike. Nevertheless it is now proposed to put in effect on May 1 a reduction of 12½ per cent in wages aboard ship. Both Atlantic and Pacific coast steamship companies will join in this movement and the shipping board has signified its willingness to abide by the result.

Unite to Promote U. S. Trade

The shipping board has determined to remove a few more operators from its lists. The assumption is that government vessels are to be allotted where greatest efficiency can be obtained. A further concentration of the management of the vessels will make for more effecting handling. In addition, the shipping board has opened a freight soliciting office in St. Louis. This is largely an experiment, yet it is hoped to result in diverting more cargoes to American vessels. If the scheme proves successful the plan will very naturally be extended. In co-operation with

the department of commerce, the shipping board will make another survey of trade routes. An evident intent exists to co-ordinate all the interests involved under the American flag to fight for the shipping business. April marked a historical development in the French Atlantic trade. At last the French and Belgian lines agreed to attend the trade conference and signed a new schedule of rates. That marked the end of the rate war which was precipitated nearly a year ago and which has been very destructive to the steamship companies in these runs. Coal to Harve last year brought \$20, but due to the rate war this was reduced to \$4. As the result of effecting peace, French Atlantic rates have been increased in some instances as much as 300 per cent. While it would appear that these increases are abnormal, they are still regarded as not in a safe proportion to the cost of doing business.

American coastal vessels have effected a through arrangement with transpacific lines, making it now possible to ship direct from the Atlantic coast to the Orient on a through-bill-of-lading, transshipment being effected at Pacific coast ports. The Williams Steamship Co. has announced a number of reductions in the intercoastal rates. Owing to the prohibitive transcontinental rail rates, California fruit is now coming to the east via the coastal lines.

Plans of American Lines

Third-class business is at present the most appealing to steamship companies despite the fact that the United States is expected to enact legislation to restrict immigration. The American line has reconditioned the freighter *MINNEKAHHA* into a third-class boat and dispatched her to Hamburg. The Red Star line has placed the *SAMLAND*, another exclusively third-class boat, in the Philadelphia and Antwerp service.

The Kerr Steamship Co. has inaugurated a regular freight service from Hamburg to the River Plate, which

parallels the service established by the United American line. The Atlantic & Pacific Steamship Corp. (U. S. line, owned by W. R. Grace & Co.) has abandoned its services to India. Shipping board steamers have been used in this service. The shipping board has been having some problems with its services and agents. The American Ship-

U. S. Ships in Orient

IN THE old Chinese port of Shanghai, where American clipper ships of years ago were seen in great numbers, the American merchant flag is again a common sight. A representative of the Pacific Mail Steamship Co. reports that in a recent month 49 of 124 foreign vessels calling at Shanghai were Americans, leading all other nations. American commercial houses are also developing agencies in the Orient, the last five years having witnessed the growth of the American Chamber of Commerce of China from 32 company memberships and 16 individual memberships to 91 companies, 122 individuals and 100 nonresident firms. Banking branches of American financial houses have also increased.

Experts in this Country and Abroad

ping Corp., which operated lines out of Jacksonville to various European ports, has turned back all its ships. On the other hand, the shipping board has recognized the Roosevelt Steamship Co. as a managing agent, which presupposes it will be assigned government tonnage for operation. The board has also recognized the United Maritime & Development Co., Detroit, as an operator and it proposes to establish a line out of New Orleans for South America.

The United American line has made an arrangement for transshipment at Hamburg of goods consigned to the Levant. At the same time it was announced that the Levant rates have been reduced. Steamship companies have also decided to reduce the rates to South African ports. This step was taken as a result of the depreciation in the value of raw materials.

In the coastal trade, the rate on cotton from Gulf ports to north Atlantic range has been cut. The Ward line reports a material improvement in the conditions at Havana and a revival of the Cuban trade is confidently expected. Steamship companies have taken advantage of the slump in business to effect many economies. All ornamental appendages are being lopped off and in instances one man is doing the work of two.

Foreigners Prepare to Compete

The Royal Mail Steam Packet Co., latest of the English lines to engage in the American transatlantic trade, is completing a fleet of refrigerator ships which it expects to use to carry Pacific coast fruit to Europe. The Canadian Merchant Marine Ltd., is establishing

a service from Halifax to Jamaica.

Although the Cunard line lost 22 vessels during the war, or more than 50 per cent of its tonnage, its building program will more than double its prewar tonnage. This would appear to be an abnormal advance in the shipping field but the ex-

Levy Fuel Oil Tax

TAX of 1 shilling 6 pence per ton placed by British authorities on the transfer of fuel oil at Gibraltar means that the majority of American steamers will fuel at Bizerta. This port is on the north African coast and is France's second naval base. Its location is directly on the route of American steamers trading to the Near East or through the Suez canal. The new British tax is hard to understand, since fuel was merely transferred in the open roadstead from American tankers or barges. Bizerta has a large tank capacity, an American company maintaining fuel facilities there. The shipping board early chose Bizerta as one of its world-wide belt of bunkering stations.

ample is not an isolated case. The Cunard line has purchased the former German steamer *IMPERATOR* from the British government and has determined to rename her the *BERENGARIA*. The White Star line has returned the *OLYMPIC* to the transatlantic passenger trade. The *MAJESTIC*, the new ex-German liner for this company is fast nearing

RATES STRONGER

**Tariffs Show Firmness in Several
Pacific Routes — Railroads Fear
Inroads of Ship Lines—Cut on Steel**

completion. The Royal Mail Steam Packet Co. plans establishing a regular freight and passenger service between New York and Hamburg. Calls will be made at French and English ports. The Hamburg-America has resumed paying dividends, the dividend for 1919 being 8 per cent. Earnings have been made out of the Baltic trade. Two ex-German steamers, prizes of war, have been chartered to the Hansa line of Germany. The steamers are the *GROSTAFELS* and *GOLDENFELS*, and were originally employed by the Hansa line, which was a factor in the trade with India.

A number of new inquiries are in the market and freight forwarders express optimism. They are anticipating a new influx of business within the next eight or ten weeks. There has been a little chartering in the market during the past month, but this as a whole has been negligible. The River Plate recently started with a burst of activity. Within a few days, some 14 or 15 steamers of handy size were placed. Values kept up fairly well. In this trade, much depends upon the grain purchases by Europe. Grain has been moving out of Galveston and one or two other gulf ports in great quantities. Greek and Italian orders have appeared at New York. Shipments also have been made through Portland, Me.

The tie-up of ships all over the world has materially affected the fuel business. Despite labor troubles in English coal fields, nothing of consequence resulted in the demand on this side of the Atlantic. Fuel oil has likewise decreased in price and demand. The shipping board has tied up the tanker *SELMA*. The demand for coal and oil is, necessarily, predicated upon the activity of shipping and the requirements of bunker stations.

See Signs of Coming Upturn

While the general tendency of the charter market on the north Pacific has been downward during March, strengthening of ocean freights in two directions within the closing week indicates that possibly the long expected upturn has come. This sudden firmness may not prove permanent but operators believe it is the first ray of light following a long period of darkness and uncertainty.

After a month of a \$10 rate on lumber to the Orient, the conference lines have succeeded in raising this item to \$15 per thousand feet. The \$10 level was granted under protest and considerable cargo was booked at this low rate which was only \$1 higher than the prewar level when operating costs were much less. By concerted effort, the trans-

pacific lines are now back to a basis which they believe is warranted by improved conditions and which will allow them to make a slight profit. American carriers, it was asserted could not handle lumber at \$10.

The rate on wheat and flour carriers from north Pacific to Great Britain and Mediterranean ports has just advanced from \$10.50 to \$12. A Norwegian steamer was recently fixed at the lower rate but a slight flurry in the market sent the rate up to \$12 at which figure three shipping board steamers have just been taken. The previous government rate was \$15. The tonnage in question has been idle for some time and the rate of \$12 was accepted rather than have the business go to foreign vessels. Whether the market will remain at \$12 is an open question as there is no great demand for vessels in this trade.

Readjust Pacific Rates

Following a reduction in the steel rate to the Orient from \$11.25 to \$6.50, a further readjustment has resulted in a rate of \$5.88 per ton on iron and steel products. The agreement was reached following an important meeting of the westbound Pacific conference. Because of reductions in the all-water route from Atlantic ports to the Far East, Pacific operators were confronted with the necessity of cutting their schedules to meet competition from eastern ports. The new tariff is said to place Pacific ports on a parity and now it is expected that considerable steel and iron will be diverted to the combined rail and water route through Pacific gateways.

In addition to the cut on steel, through rates to the Orient are now \$15 on unmanufactured tobacco while cigarettes take a rate of \$10 per net ton. Automobiles have been cut from \$10 to \$8 per measurement ton. With these readjustments, Pacific services expect that they will now get their share of through business which for the last six months has been moving through Atlantic ports which were favored by the rates in existence until recently. While the reductions have been drastic, Pacific lines concluded that material concessions must be made as a matter of self-preservation.

In an effort to assist Pacific coast packers to move their surplus stocks, the intercoastal lines have adopted new schedules under which canned goods are cut from 65 cents to 50 cents per hundredweight. This reduction is about 23 per cent. and applies to canned fruit, canned milk and canned salmon. The concession is expected to stimulate the movement of these Pacific coast products to eastern markets. The lower rate is effective until July 31 next by which date it is believed the surplus on the west coast will have been cleaned up.

While the lumber rate to the Atlantic remains at \$20 and ties at \$18, lumbermen and steamship operators are in negotiation looking toward further concessions. Lumber shippers are asking the water carriers to allow a rate of \$18 and also to give free carriage to stakes and straps used in the back haul by rail. Shingle shippers also want the steamships to assume the same liability allowed by the railroads. These matters are under consideration with evidence that an amicable agreement will be reached. While some water carriers do not like to handle lumber, the position of the lumber industry

is realized by the steamship operators and the latter desire as far as is consistent to aid the lumber industry. However, the intercoastal lines are booking increased tonnages of shingles, copper, canned goods, flour and grain and a substantial business is being fostered.

Take Trade from Railroads

Water shipments are rapidly increasing because of the high rail rates. In fact the land carriers are considerably alarmed at the diversion of cargo to the water routes. To consider the situation the transcontinental railroads are to hold shortly a conference at San Francisco for the purpose of working out a tariff of terminal rates based on water competition. The interstate commerce commission will be asked to grant the necessary permission so that the roads may return to the prewar practice of meeting water rates. The railroads regard the situation as serious and they realize that some concessions must be made in order to meet the condition. Prior to the war terminal rates were in effect based on Panama competition. The steamships are conceded to be making serious inroads on the business of the land carriers.

The movement of lumber in the offshore trades is very slow. Little chartering has been done. The disparity in exchange, the inability of foreign markets to finance their needs and the hope of foreign buyers that commodity prices and ocean freights may go lower are deterrent factors. Indicating the trend of the market, a sailing vessel has been fixed for lumber to the West coast at \$20 per thousand while tonnage is said to be offering to Australia at \$18. The lumber rate to South Africa is now \$35, to United Kingdom 200 shillings and ties at 150 shillings. However, no lumber or ties are being booked and the market is dormant. The most active movement by water at present is in the intercoastal routes on which increasing business is noted although competition is very keen. There is a slight improvement in the Orient trades but the supply of space still exceeds the demand.

A cut of \$5 per ton in general freight from British Columbia ports to Calcutta is announced by the Canadian Merchant Marine Ltd., the new tariff of \$14.40 corresponding to the rate from Vancouver to Hongkong and transshipment to Calcutta.

Trade Gaining at Boston

General cargo movement through the port of Boston has just about held its own during the past month, but grain shipments have noticeably increased and the whole sentiment has improved decidedly. Inquiry for grain and manufactured commodities materially increased during the past two weeks and now with the rate war ended, and the activity of the Maritime association of Boston well launched, the port looks forward to regaining its former share of the country's traffic.

One of the principal services to gain in grain shipment and general inquiry is that to Scandinavian ports. The Sprague line, operating several boats to this destination, has had full cargoes during the month and recently exchanged its 4100-ton ship LAKE FLAMBEAU for the ROCKAWAY PARK of 8800 tons. A recent sailing of this company carried a full cargo of corn from the port of Boston to Rotterdam.

The coastwise coal trade started to improve about

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated
Corrected to April 9, 1921

Via Established Lines

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General Cargo cu. ft.	100 lbs.	Finished steel	Coal from Virginia cities	From North Pacific Ports to	Lumber Per M. ft.
Liverpool.....	\$0.28½	\$0.75	\$0.32½	\$0.33½	\$0.45	\$0.85	\$8.00T	.....	San Francisco.....	\$ 8.50
London.....	0.28½	0.75	0.32½	0.33½	0.45	0.85	8.00T	.....	South California.....	10.00
Christiania.....	0.45	0.50	0.72½	0.35	0.55	1.00	10.00T	\$5.75T	Hawaiian Islands.....	15.00
Copenhagen.....	0.45	0.50	0.72½	0.35	0.55	1.00	10.00T	5.75T	New Zealand.....	20.00
Hamburg.....	0.27½	0.55	0.50	0.32½	0.45	0.82½	10.00T	4.75T	Sydney.....	20.00
Bremen.....	0.27½	0.55	0.50	0.32½	0.45	0.82½	10.00T	4.75T	Melbourne-Adelaide.....	25.00
Rotterdam.....	0.25	0.50	0.75	0.30	0.40	0.75	8.00T	4.00T	Oriental ports.....	10.00
Antwerp.....	0.25	0.50	0.60	0.30	0.40	0.75	8.00T	4.00T	Peru-Chile.....	20.00
Havre.....	0.25	0.50	0.50	0.30	0.40	0.75	8.00T	4.75T	South Africa.....	35.00
Bordeaux.....	0.25	0.50	0.50	0.30	0.40	0.75	8.00T	4.75T	Cuba.....	20.00
Barcelona.....	0.65	1.25	0.75	0.65	—20.00T—	—	16.00T	6.00T	United Kingdom.....	200s
Lisbon.....	0.65	1.25	0.75	0.65	—20.00T—	—	16.00T	5.25T	United Kingdom (ties).....	150s
Marseilles.....	0.35	0.75	0.75	0.40	—22.00T—	—	12.00T	6.00T	New York.....	\$20.00
Genoa.....	0.25	0.75	0.50	0.80	0.50	1.00	9.00T	5.75T	New York (ties).....	18.00
Naples.....	0.25	0.75	0.50	0.80	0.50	1.00	9.00T	5.75T		
Constantinople.....	0.35	18.00T	1.25	0.40	—22.00T—	—	15.00T	8.00T	Flour and Wheat	
Alexandria.....	0.35	0.80	.....	0.40	—22.00T—	—	15.00T	8.00T	Oriental ports.....	\$ 7.00T
Algiers.....	0.35	1.12	.....	0.40	—25.00T—	—	12.00T	6.00T	United Kingdom.....	55 to 60 s T
Dakar.....	23.00T	23.00T	23.00T	30.00T	—28.00T—	—	20.00T	.....	Scandinavia.....	55 to 60 s T
Capetown.....	27.00T	27.00T	27.00T	30.00T	—27.00T—	—	20.00T	.....	Mediterranean.....	60 to 6 T
Buenos Aires.....	.....	.....	.....	.....	—20.00T—	—	12.00T	6.00T		
Rio de Janeiro.....	.....	.....	.....	.....	—22.50T—	—	16.50T	6.00T		
Pernambuco.....	.....	.....	.....	.....	—23.50T—	—	17.50T	5.75T		
Havana.....	0.46*	0.50*	.....	0.46*	0.47*	0.94*	0.46½*	2.25T	Steel	
Vera Cruz.....	0.70	0.75	.....	0.75	0.52½	1.05	0.60	.....	Oriental ports.....	\$5.88T
Valparaiso.....	1.25	1.16	1.00	0.74	1.32	16.00T	5.75T	.....	Cotton	
San Francisco.....	0.75	.....	0.85	.....	25.00 to 30.00T	15.00T	.....	.....	Oriental ports.....	\$10.00T
Sydney.....	.....	.....	.....	.....	—21.00T—	18.00T	.....	.....
Calcutta.....	21.00T	.....	.....	.....	.....	.....	.....	.....

T—ton. †Landed.

††Heavy products limited in length.

*Extra charge for wharfrage.

Principal Rates To and From United Kingdom

	s	d		s	d
Grain, River Plate to United Kingdom.....	40	0	Iron ore, Bilbao to Middlesborough.....	7	6
Coal, South Wales to Near East.....	20	0	General British market, six months time charters, per ton per month.....	6	0
Coal, Newcastle to France.....	7	6			

Bunker Prices

At New York				At Philadelphia			
	Coal alongside per ton	Fuel oil 16 baume per barrel	Diesel oil gravity 27 per gallon		Coal per ton	Fuel oil 16 baume per barrel	Diesel oil gravity 27 per gallon
January 8.....	\$7.00	\$2.94	10 cents	January 10.....	\$9.45	\$2.08	8.2 cents
February 5.....	5.40 @ 6.80	2.50	9 cents	February 8.....	8.40	2.31	6.5 cents
March 7.....	5.25 @ 6.75	2.35	8 cents	March 7.....	7.60	2.10	5.7 cents
April 6.....	6.40 @ 6.75	1.95	6.5 cents	April 7.....	5.75 @ 6.00	1.98	5.7 cents

the middle of the month and has shown a steady increase ever since. The coast to coast trade between Boston and Pacific coast ports has continued to show the successful business which this service has enjoyed ever since its inauguration last fall.

Under the direction of the shipping board's operating department at the Boston port, several important economies in port charges have recently been made and a movement toward further economies is in progress. The cost of discharging dry ballast has been reduced from \$1 to 90 cents a ton and docking charges for cargo carriers has been reduced

from \$10 a day to \$8 a day. F. S. Davis, the new manager of the Boston Maritime association, has just taken his new office, and has extensive plans for the future of New England shipping. Grain freight rates have jumped from 17 cents to 25 cents as a result of the end of the rate war. Passenger service between Boston and European ports has materially increased during the month.

The Baltimore Steamship Co., with government tonnage, may operate a new line out of New York for Porto Rico and Cuba. The United Fruit Co. resumed tourist service between Boston and Panama.

British Coal Strike Cripples Shipping

From Our European Manager

London, April 11.—(by cable) Ocean freight markets are depressed by the coal strike stopping production. Chartering of ore from Spanish ports to United Kingdom has practically ceased but chartering for northern continental ports continues. For coal from the United States to Gibraltar, 25 shillings per ton is being paid with 35 shillings to Port Said. Inquiries for tonnage for Cape Verde islands has developed at \$5 and for Dakar at \$5.75. Rotterdam is using German coal sup-

plied as reparation to Belgium and France. British steamers are being chartered on time at 6 shillings a month compared with 7 shillings recently paid, the new rate being the lowest recorded in many years. Argentine grain freights are firmer at 40 shillings per ton to Europe. Negotiations are under way between South African merchants and shipping lines for substantial freight reductions from Europe. This question has been brought to a head by active Dutch competition.

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING
A. G. Eisnor	Mar. 10	Disabled	Trepassey	Not stated	Gladys M Hollett	Apr. 4	Struck ice	At sea	Heavy
Armistice	Feb. 26	Disabled	Cape Race	Leaking	Governor	Mar. 31	Collision	Off Point Wilson	Sank
Andreas	Mar. 9	Bunkers afire	Piraeus	Not stated	Harry A. McLennan	Mar. 28	Grounded	Dog Island	Not stated
Augusta Foherczegno	Mar. 8	Grounded	Venice harbor	Not stated	Hugoton	Mar. 29	Disabled	Gibraltar	Engine trouble
Armagh	Mar. 14	Collision	Bristol	Not stated	Harvester	Apr. 1	Missing	At sea	Not known
Amy G. McKeen	Mar. 17	Disabled	St. Michaels	Lost sails					
Andrew F. Luchenbach	Mar. 17	Fire	Hamburg	Slight					
Admiral Mayo	Feb. 12	Heavy weather	At sea	Lost sails, leaking	Italian	Mar. 6	Collision	Off Belgium coast	Slight
Antonio Millan	Mar. 21	Disabled	Ferrol	Jettisoned deckload	Invincible	Mar. 14	Collision	At sea	Stem and plates damaged
Alloway	Apr. 4	Grounded	Balboa Straits	Not stated	Indier	Mar. 11	Grounded	South Pass	Slight
Aniwa	Mar. 28	Disabled	Montevideo	Engine trouble	Iru	Mar. 10	Fire	Antwerp	Not stated
Amalco	Mar. 28	Heavy weather	At sea	Fittings damaged	Indiana Bridge	Mar. 21	Disabled	At sea	Not stated
Anna Laura McKenney	Mar. 15	Grounded	Puerto	Total loss	Iroquois	Mar. 27	Disabled	New York	Boiler trouble
Blue Triangle	Mar. 6	Grounded	Libreville	Not known	Impoco	Apr. 5	Grounded	Blond Rock	Heavy
Batavia	Mar. 9	Disabled	New York	Leaking	Irma	Mar. 28	Collision	Off Red Hook	Headgear and bowsprit damaged
Benguela	Feb. 17	Disabled	Port Natal	Studs broken					
Bermudez	Mar. 14	Sunk	Brooklyn	Not known	James B. Drake	Apr. 2	Grounded	Sandy Hook	Not stated
Brento	Mar. 14	Fire	Brooklyn	Heavy	Jenny Flood Greger	Mar. 27	Collision	Off Cape Henlopen	Short fuel
British Earl	Mar. 9	Disabled	Bermuda	Boiler trouble	Javary	Apr. 2	Disabled	At sea	
Bluet	Mar. 13	Disabled	Fayal	Leaking					
Bayard	Mar. 10	Disabled	Hull	Machinery trouble	Korea Maru	Mar. 5	Afire	Hongkong	None
					Kentuckian	Mar. 16	Disabled	Off Ambrose	Boiler trouble
Bibbco	Mar. 16	Grounded	Off Rosario	Not stated	Kersan	Mar. 10	Grounded	River Elbe	Leaking, damaged stern
Bella	Mar. 10	Disabled	Off Sandy Point	Machinery trouble					
Bluefields	Mar. 8	Disabled	Vera Cruz	Not stated	Liebre	Mar. 1	Grounded	Anacapa Island	Not stated
Barbar Barr	Mar. 11	Grounded	Off Cape Race	Leaking	Lowell F. Parks	Mar. 17	Disabled	Barbados	Lost sails
Bensalem	Mar. 21	Grounded	Off Hamburg	Not stated	Leo Le Blanc	Mar. 15	Disabled	Barbados	Leaking, lost sails
Bangor	Mar. 16	Fire	San Francisco	Heavy					
Bernard M	Mar. 21	Grounded	Fish Island Ledge	Lost propeller	Lake Elijah	Mar. 24	Fire	Cabanas	Heavy
Bellflower	Mar. 22	Disabled	Jacksonville	Not stated	Luella	Mar. 23	Disabled	St. Michael's	Condenser damaged
Bellepline	Apr. 2	Squall	New Orleans	Not stated	Lewis H. Goward	Apr. 2	Abandoned	At sea	Total loss
Breiford	Mar. 28	Collision	Off Liberty	Slight	Leonora Silveira	Apr. 2	Disabled	Georges Bank	Foremast carried away
Charles McWilliams	Mar. 9	Swamped	Bridgeport	Sank	Liberty Glo	Apr. 5	Disabled	St. Michaels	Boiler trouble
Clarence Trahan	Mar. 6	Grounded	Halls Island	Not stated	Lake Gardner	Apr. 2	Squall	New Orleans	Not stated
City of Columbo	Mar. 8	Grounded	Lovells Island	Not stated	Lake Frenchton	Apr. 2	Squall	New Orleans	Not stated
Chester Valley	Mar. 16	Grounded	Goodwins	None	Lake Fraichur	Apr. 2	Squall	New Orleans	Not stated
City of Papeete	Mar. 16	Fire	San Francisco	Not stated	Lake Elkwater	Mar. 28	Collision	Off Tompkinsville	Not stated
Centaurus	Mar. 24	Disabled	At sea	Fuel trouble					
City of Berkeley	Mar. 24	Disabled	At sea	Not stated	Mildred & Agnes	Mar. 7	Disabled	Boston	Lost mainmast
Chester Kiwanis	Mar. 17	Heavy weather	At sea	Pump, leaking	Mount Sidney	Mar. 4	Grounded	Off Kent Island	Not stated
Condor	Mar. 30	Disabled	Jekyl Island	Not stated	Madimba	Mar. 6	Collision	Off Belgium coast	Sank
Curieuse	Mar. 28	Missing	At sea	Not known	Marjory Mehaffey	Mar. 1	Disabled	Trepassey	Propeller trouble
City of Sherman	Mar. 26	Disabled	Southampton	Machinery trouble	M. B. Wheeler	Mar. 5	Collision	Staten Island	Sank
					Marianne	Mar. 4	Grounded	Venice harbor	Not stated
Cecil County	Apr. 2	Squall	New Orleans	Not stated	Massillon Bridge	Mar. 4	Grounded	Ambrose channel	Not stated
Canada	Mar. 28	Collision	Tompkinsville	Not stated	Monona	Mar. 12	Disabled	At sea	Lost blade
Coriolanus	Mar. 28	Collision	Off Red Hook	Headgear damaged	Monte San Michele	Mar. 15	Overdue	At sea	Not known
					Mojave	Mar. 17	Disabled	Horta	Leaking
					Mobile City	Mar. 14	Collision	Bristol	Portside damaged
David Cohen	Mar. 19	Disabled	Norfolk	Pump, trouble	Madawaska	Mar. 14	Collision	At sea	Leaking
Diana	Apr. 4	Struck ice	At sea	Damaged bows	Monmouth	Mar. 11	Collision	Lisbon	Sides and propeller damaged
District of Columbia	Apr. 2	Squall	New Orleans	Not stated	Mars	Mar. 11	Collision	Lisbon	Slight
					Montague	Mar. 10	Grounded	Columbia River	Steerer damaged
Ernemore	Mar. 9	Struck wreck	Constantinople	Leaking	Mattoppo	Mar. 13	Disabled	Newport News	Not stated
Edgemont	Mar. 8	Collision	At sea	Not stated	Max Horton	Mar. 12	Fire	St. Johns	Slight
Eastholm	Mar. 9	Grounded	Vancouver	Not stated	Merida	Mar. 23	Grounded	Macoya	Not stated
					Margaret	Mar. 23	Grounded	Off Romer Shoals	Not stated
Egyptian Transport	Mar. 5	Collision	Narrows	Bow damaged	Manoa	Mar. 27	Collision	Barry harbor	Not known
Edgar F. Luckenbach	Mar. 16	Grounded	Off Jotel	Not stated	Munplace	Mar. 26	Grounded	Off Cardenas	Not stated
El Oriente	Mar. 15	Fire	New York	None	Miriam Landis	Apr. 1	Collision	Gibraltar	Slight
Eiger	Mar. 16	Disabled	Horta	Pipe burst	M. A. Knapp	Apr. 1	Sank	Philadelphia	Not known
Evolution	Apr. 2	Heavy weather	At sea	Lost sails, leaking	Molissement	Mar. 31	Struck quay	Marseilles	Rudder damaged
					Mount Summit	Apr. 2	Squall	New Orleans	Not stated
Eugene V. R. Thayer	Mar. 27	Collision	Off Cape Henlopen	Slight					
Eagle boat No. 32	Mar. 26	Disabled	Off Point Augello	Not stated	No. 31	Mar. 4	Grounded	Man-o-war Reef	Heavy
Edgehill	Apr. 1	Cargo damaged	At sea	Not stated	Nokatay	Mar. 7	Disabled	New York	Mach. trouble
					Nantahala	Mar. 14	Disabled	Bahia	Boiler trouble
Fredville	Mar. 15	Collision	North Sea	Sank	Neptune	Mar. 20	Grounded	Palace Rock	Abandoned
Frieda	Mar. 10	Fire	Off Bermuda	Abandoned	Needles	Mar. 16	Disabled	At sea	Boiler trouble
Florine	Mar. 9	Missing	At sea	Not known	Nobles	Apr. 2	Squall	New Orleans	Not stated
Fert	Mar. 18	Fire	Galveston	Not stated					
Frederick H	Apr. 1	Grounded	St. George harbor	Shoe and forefoot lost	Orizabal	Mar. 15	Heavy weather	Cape Ortegal	Grounded
					Omaha	Mar. 7	Disabled	St. Nazaire	Lost mast
Farnam	Mar. 26	Disabled	St. Michaels	Boiler trouble	Olen	Mar. 23	Disabled	Constantinople	Valve and cylinder trouble
Fred J. Wood	Feb. 18	Heavy weather	At sea	Heavy					
					Oskawa	Mar. 30	Disabled	London	Mach repairs
Greiffenfels	Feb. 28	Heavy weather	At sea	Not stated	Oskaloosa	Apr. 2	Squall	New Orleans	Not stated
Greystoke Castle	Mar. 5	Collision	Gravesend	Bow damaged	Osaukee	Mar. 27	Disabled	At sea	Not known
Grampian	Mar. 15	Fire	Antwerp	Not stated	Paralos	Mar. 10	Grounded	Virginia Beach	Not stated
Guiseppo D'Alli	Mar. 20	Grounded	Off Cape Charles	Not stated	Pemanencia	Mar. 8	Grounded	Little Miquelon	Not stated
Golden Gate	Mar. 21	Grounded	Ellesmere Port	Not stated					
Glendale	Mar. 16	Fire	San Francisco	Not stated	Penrhidd	Mar. 13	Disabled	Plymouth	Mach. damaged
Governor Brooks	Mar. 23	Abandoned	At sea	Total loss	Poleric	Mar. 10	Fire	St. Michaels	Not stated
Guiana	Mar. 29	Fire	St. Kitts	Slight	Portia	Mar. 18	Grounded	St. Jacques	Forefoot damaged
					Prins Valdemar	Mar. 21	Collision	Bay Ridge	none

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING
Point Bonita	Mar. 22	Grounded	Corinto harbor	Not stated	Turret Cape	Mar. 11	Disabled	Louisburg	Struck ice
Pachet	Apr. 4	Disabled	St. Michaels	Mach trouble	Toucey	Mar. 22	Grounded	Little St. Simons Island	None
Pequot	Apr. 2	Squall	New Orleans	Not stated	Triumph	Mar. 23	Disabled	At sea	Fuel oil trouble
Rodger Sullivan	Mar. 5	Collision	Staten Island	Not stated	Tennessee	Mar. 23	Disabled	Norfolk	Motor trouble
Retraction	Mar. 11	Stuck in ice	Off Cape Race	Not stated	Tahiti	Apr. 4	Fire	Wellington	Cargo damage
Rovaer	Mar. 10	Disabled	At sea	Lost blade	Thomas P. Emigh	Mar. 24	Heavy weather	At sea	Lost sails
Roberta Fay	Mar. 12	Abandoned	Off Newfoundland	Total loss	Uberaba	Mar. 27	Grounded	Off coast Maranhao	Sank
Rough Rider	Mar. 21	Grounded	Off Squam Lighthouse	Total loss	Vincennes Bridge	Mar. 14	Collision	North sea	Not stated
Ruth Merrill	Apr. 1	Grounded	Off Skaw	Not stated	Vittoria	Mar. 28	Disabled	Adelaide	Leaking
Robin	Apr. 1	Disabled	Off Cape Lookout	Not stated	Victory Chimes	Mar. 24	Disabled	Martinique	Not stated
Steel Exporter	Mar. 10	Collision	Off Red Hook	Not stated	Willcasino	Mar. 10	Collision	Off Red Hook	Leaking
S. O. Barge No. 83	Mar. 14	Fire	Tampico	Heavy	Wanby	Mar. 10	Grounded	Kennebunkport	Abandoned
Saranac	Mar. 11	Grounded	South Pass	Slight	Westwave	Mar. 5	Heavy weather	Off Diamond Shoal	Lost sail and anchors
Stanja	Mar. 18	Heavy weather	Fishguard	Lost blade, deck damaged	West Hargrave	Mar. 5	Disabled	Halifax	Engine trouble
Stavangerfjord	Mar. 10	Grounded	Governors Island	None	West Bridge	Mar. 12	Collision	Norfolk	Not stated
Storm King	Mar. 11	Grounded	Atlantic Highlands	Pier Not stated	West Galoc	Mar. 18	Disabled	At sea	Boiler trouble
Smuggler	Feb. 26	Disabled	St. Johns	Bulwarks and lifeboats smashed	West Neris	Mar. 10	Disabled	At sea	Engine trouble
S. G. Wilder	Mar. 12	Disabled	Gulfport	Windlass damaged	William H. Smith	Mar. 12	Disabled	Papeete	Leaky
Songvand	Mar. 21	Collision	Bay Ridge	Rails damaged	William M. Mills	Mar. 20	Disabled	Off Fenwick Island	Not stated
South Pole	Mar. 21	Disabled	At sea	Engine trouble	William Booth	Mar. 21	Grounded	Great Ledge	None
Salina	Mar. 18	Disabled	San Francisco	Steerer trouble	West Keene	Mar. 22	Disabled	Kahului	Engine trouble
Stadium	Mar. 21	Grounded	Miquelon	Not stated	W. S. Rheem	Mar. 24	Disabled	Southampton	Lost blade
Svartskog	Mar. 22	Missing	At sea	Not known	William P. Palmer	Mar. 29	Disabled	Philadelphia	Pump trouble
Silverado	Apr. 2	Disabled	At sea	Lost blade	Winnipiepe	Mar. 28	Struck bridge	Neches river	Heavy
S. M. 107	Mar. 29	Broke from tow	At sea	None	West Hartland	Apr. 1	Collision	Off point Wilson	Heavy
San Pasqual	Apr. 2	Squall	New Orleans	Not stated	Woudrichem	Mar. 28	Disabled	Yokohama	Boiler trouble
Seneca	Apr. 2	Squall	New Orleans	Not stated	Winneconne	Apr. 2	Squall	New Orleans	Not stated
Trintolite	Mar. 13	Struck lock	Panama	Not stated	Wakulla	Mar. 28	Collision	Off Liberty	Slight
Tuscaloosa City	Mar. 14	Grounded	Mobile	Not stated	Yomachichi	Mar. 3	Disabled	Bermuda	Not stated
					Yonan Maru	Mar. 12	Collision	Norfolk	Side damaged

Marine Business Statistics Condensed

Panama Canal Traffic

Below is a summary of the character and tonnage of cargo passing through the Panama canal in February, 1921:

ATLANTIC TO PACIFIC

Commodity	Tons
Oil, crude	105,069
Coal and coke	90,101
Oil, refined	61,680
Manufactured goods:	
Iron and steel	48,419
Machinery	4,544
Railroad material	12,678
Sulphur	15,414
Cement	9,731
Sugar	11,360
Cotton, raw	6,423
Tin (metal)	5,056
Paper	4,051
Tobacco	2,420
Ammonia, sulphate of	2,047
Glass	1,731
General and mixed	94,148
Total	474,872

PACIFIC TO ATLANTIC

Nitrate	191,928
Wheat	79,201
Lumber	36,518
Oils:	
Refined	21,322
Cocanut	8,150
Vegetable	1,113
Sugar	13,818
Barley	12,687
Flour	12,316
Metals:	
Copper	8677
Other	863
Cold storage and food products	5,260
Ores:	
Copper	3040
Tin	1532
Other	974

Wool	5,977
Coffee	4,341
Canned goods:	
Fish	3781
Fruit	1210
Other	644
Beans	2,565
Cocao	2,469
Peanuts	2,000
Rubber, raw	3,103
Borax	2,182
Skins and hides	1,134
Hemp	1,544
General and mixed	49,683
Total	478,032

Pittsburgh River Traffic

The following table shows the traffic in the Pittsburgh river district during February:

Commodity	Allegheny river	Monongahela river	Ohio river
Coal	18,935	1,084,750	54,300
Coke		14,274	
Gasoline	1,500	450	1,000
Gravel	58,430	45,174	6,265
Sand	30,630	50,592	2,998
Miscellaneous	423	13,000	4,580
Packet cargo			2,050
Total	109,918	1,208,250	71,193

At a recent meeting of the New England Drydock and Ship Repair association, it was decided to reduce the wages of caulkers, according to the Macey award, from 80 cents to 72 cents an hour.

New Shipping Firms

During March, 12 companies with an aggregate authorized capitalization of \$5,650,000 were organized. This total compares with \$6,450,000 in February, \$12,650,000 in January and \$61,850,000 in March of last year. The record as compiled by the *Journal of Commerce*. New York, shows an indicated investment in marine firms of \$24,850,000 during the first quarter this year compared with \$171,535,000 in the corresponding quarter of 1920.

The following list shows the companies incorporated during March:

Catskill Evening Line, Delaware	\$400,000
Deep Water Salvage & Dry Dock Co., Washington	1,000,000
Exchange Steamship Co., Delaware	100,000
Halschaw Steamship Lines, Maryland	300,000
Hawk Steamship Line, New York	100,000
King Philip Steamship Co., Massachusetts	300,000
National Mercantile Marine, Maryland	100,000
Pennsylvania Transatlantic Steamship Co., Delaware	100,000
Parkersburg Dry Docks Transportation & Coal Co., West Virginia	250,000
Steele Steamship Line, Texas	100,000
Tidewater Transportation Co., Washington	2,500,000
Union Transportation Line of Maryland, Maryland	400,000
Total	\$5,650,000

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New York

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921...	455	1,574,526	448	1,539,885
February	424	1,407,133	374	1,315,556
January	455	1,437,725	414	1,433,564
December, 1920.	516	1,732,485	518	1,802,929
November	495	1,741,786	482	1,691,683
October	526	1,763,904	514	1,719,103
September	506	1,728,266	493	1,574,228
August	537	1,634,719	499	1,649,416
July	510	1,627,721	462	1,518,406
June	508	1,545,144	436	1,364,297
May	444	1,343,052	390	1,258,996
April	431	1,302,177	386	1,243,000
March	440	1,322,013	410	1,369,829
February	377	1,174,913	330	1,054,269

Portland, Me.

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921....	24	75,529	25	80,107
February	20	66,422	21	73,581
January	34	93,933	28	86,559
December, 1920.	36	96,281	31	107,567
November	37	61,804	16	23,282
October	15	22,240	13	19,862
September	14	29,993	5	12,661
August	31	42,464	14	8,626
July	19	27,314	9	9,022
June	29	45,670	12	34,886
May	25	44,634	17	30,537
April	17	46,003	24	69,688
March	15	53,757	19	68,864
February	18	60,928	15	49,012

Boston

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921...	99	306,454	49	113,184
February	74	260,502	46	119,847
January	72	175,052	50	125,904
December, 1920.	66	178,656	51	128,439
November	79	193,433	52	107,112
October	82	182,028	62	116,007
September	99	210,496	75	123,045
August	133	235,706	83	124,643
July	111	212,954	87	124,699
June	120	198,136	88	124,594
May	85	124,670	81	87,436
April	84	180,496	68	118,224
March	60	170,786	36	87,517
February	46	124,222	24	55,523

Mobile

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921...	79	146,798	56	82,898
February	58	105,040	47	89,647
January	68	94,273	63	78,109
December, 1920.	97	147,575	74	122,293
November	73	91,814	54	74,252
October	64	98,107	81	128,540
September	55	102,589	60	111,595
August	77	118,308	71	127,201
July	74	117,421	68	101,845
June	72	100,886	65	92,090
May	64	105,233	79	109,204
April	73	98,167	74	104,886
March	77	108,877	66	95,084
February	63	78,053	65	82,528

Savannah

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921...	13	19,924	14	29,618
February	9	14,493	15	32,475
January	11	21,591	20	38,179
December, 1920.	22	45,085	26	36,110
November	32	61,216	18	28,108
October	22	35,837	33	55,632
September	21	43,316	21	46,881
August	15	22,562	16	31,695
July	16	29,561	14	23,679
June	20	41,844	21	39,280
May	16	29,270	17	36,425
April	21	37,913	22	49,475
March	30	62,502	28	66,752
February	12	74,959	27	70,674

Seattle

Deep-sea arrivals Deep-sea departures

Month	No. ships		Net tonnage	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921...	103	295,144	101	272,136
January	131	312,072	134	344,877
December, 1920.	205	323,744	186	302,051
November	256	348,452	228	337,890
October	359	347,412	314	366,669
September	422	380,582	323	345,535
August	438	371,148	393	368,327
July	417	441,626	461	444,607
June	353	332,666	433	346,849
May	376	328,594	392	324,932
April	328	331,921	348	334,540
March	290	341,705	299	325,164
February	220	302,158	236	306,467

San Francisco

(Inclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921...	335	645,435	341	611,575
February	305	594,636	297	548,103
January	356	585,689	330	566,201
December, 1920.	388	606,666	359	561,188
November	393	640,474	399	633,274
October	431	641,970	421	639,323
September	399	549,468	391	566,048
August	427	653,372	401	604,069
July	393	589,656	411	660,377
June	396	587,499	383	601,054
May	418	579,914	438	622,608
April	415	569,051	437	578,213
March	386	554,707	383	556,551
February	383	556,270	388	579,256

Key West

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
February, 1921	124	118,950	120	119,241
January	128	146,679	127	142,474
December, 1920.	102	102,611	121	97,733
November	103	90,374	98	82,126
October	84	92,944	79	80,681
September	97	87,017	95	89,030
August	98	91,442	102	87,420
July	90	83,862	89	83,374
June	94	85,776	95	84,583
May	98	85,982	99	84,600
April	89	83,637	91	86,048
March	101	106,012	96	97,905
February	81	87,331	79	86,085

Baltimore

(Exclusive of Domestic)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921...	111	320,238	107	316,536
February	112	380,602	93	292,881
January	131	401,511	112	344,480
December, 1920.	92	264,142	113	329,320
November	109	316,743	145	425,493
October	134	372,463	188	545,974
September	120	353,374	143	409,839
August	103	282,370	169	473,160
July	140	401,116	155	454,643
June	143	411,978	183	528,270
May	121	360,192	153	434,472
April	71	207,587	116	321,937
March	66	209,356	84	263,216
February	59	179,884	54	162,763

The New Orleans Association of Commerce has suggested to the dock board that it use the rentals paid for industrial sites along the new inner harbor and navigation canal for the extension of needed improvements to the main port of New Orleans on the Mississippi river. These improvements would include, according to this suggestion, publicly owned wharves, terminals, warehouses and facilities for handling cargoes to and from ships.

Philadelphia

(Including Chester, Wilmington and the whole Philadelphia port district)

Month	Entrances—		Clearances—	
	No. ships	Net tonnage	No. ships	Net tonnage
March, 1921...	102	306,512	87	242,606
February	104	285,369	75	221,402
January	84	250,233	68	217,281
December, 1920.	116	340,133	112	235,821
November	126	338,562	123	350,385
October	119	328,074	165	465,800
September	144	385,676	153	467,357
August	153	377,695	156	438,230
July	104	250,104	93	272,913
June	121	286,061	79	196,787
May	129	316,246	126	315,997
April	100	236,487	98	266,795
March	106	260,185	71	192,279
February	76	205,350	71	261,123

New York Traffic

Both entrances and clearances at New York showed a marked improvement during March, the record being the best for this year, better than for any month last spring and equal to the traffic through the port during last summer. Of the 455 ships which entered the port in March, only 64 came in ballast. Of the total, 121 ships brought bulk cargoes and 270 carried general cargoes. Of the 448 ships which cleared during March, only 56 went out in ballast.

While the traffic is undeniably much heavier, it does not reach the volume which was being handled in the last half of 1920. At the same time, the tonnage supply is much larger than the demand and this is keeping rates down to the minimum. During February, 50 more ships entered than cleared. During March, the entrances exceeded the clearances by but 7 ships. This is an indication of the beginning of the end of the tie-up movement.

Philadelphia Traffic

Traffic through the port of Philadelphia during March showed another gain, the improvement being especially noticeable in clearances. During February the number of ships clearing was 29 short of the number entering. During March the clearances were but 15 ships short of the entrances. A few bulk sugar cargoes have been brought in, while the exports showed little variation from the usual commodities.

Out of the total entrances, 19 ships entered in ballast, whereas 25 cleared in ballast. This indicates that the inward movement was heavier than the outward. American vessels predominated in the ballast movements both ways.

Marine News in a Personal Way

Intimate Gossip About What Leaders in the
Maritime World Are Doing

AS THE climax of a transportation career extending over 20 years, B. L. McMullen is having signal success in his new position as manager of the Portland, Oreg., office of Sudden & Christenson, Inc. The Portland office is doing an extensive business in chartering shipping board and foreign tonnage to all parts of the world handling Pacific coast wheat and lumber. To his present position, Mr. McMullen brought a long experience in every branch of transportation that has been invaluable in negotiating a number of recent charters.

Mr. McMullen's early training was with eastern railroad companies. He came west to join the Great Northern in 1907 and began his steamship career with the American-Hawaiian Steamship Co. His next promotion was to the staff of Dodwell & Co., agents for the well known Blue Funnel line. He remained with this firm until 1917 getting much of his training under A. F. Haines, now vice president and general manager of the Admiral line. His next position was general freight and passenger agent for the Borden Line Transportation Co., a subsidiary of Dodwell & Co. Under Mr. Haines, Mr. McMullen joined the Pacific Steamship Co. and for three years he was manager of the Pacific Lighterage Co., a subsidiary of the Admiral line, in which position he had splendid success in handling the towing and lighterage business of this company. Last year he joined the Columbia Pacific Co. at Portland as general freight agent remaining with that firm until he assumed the management of Sudden & Christenson's Portland office where he has been active in promoting deep sea commerce out of the Oregon port.

FRANK S. DAVIS, former chief of the New England Tariff bureau in New York, has recently been appointed manager of the Maritime association of the chamber of commerce, Boston.

CAPT. WILLIAM M. SMITH, port captain at New York of the White Star line has just retired after 43 years of continuous service for this company. He began his sea service in 1868 and served 10 years on a training ship and on sailing vessels. In 1878 he was made fourth officer of the BRITANNIC and from 1888

to 1899 commanded a number of the company's vessels in Atlantic and Pacific routes. Since the latter year he has been stationed at New York.

CHARLES A. WILLIAMS has been appointed lake traffic manager of the Jones & Laughlin Steel Co., and the Interstate Steamship Co., Cleveland. He had been associated for 26 years



B. L. McMULLEN

with the Becker steamship and ore interests and indirectly with the Jones & Laughlin Steel Co., as the Becker fleets transported that firm's ore. Mr. Williams entered the steamship field in 1895 with J. H. Outwaite & Co. When that firm was dissolved, he continued with W. H. Becker and W. G. Pollock in the Pollock-Becker Co. His experience has thoroughly fitted him for the responsibilities of his new position.

S. A. OYEN has been made general manager of the Richmond-New York Steamship Co. He is directing the line, succeeding Harris, Magill & Co., agents, who relinquished control over operations March 1.

H. H. BENEDICT, traffic manager of the Green Star Steamship Corp., has resigned to become sales manager of G. D. Harris & Co., 522 Fifth avenue,

New York, coal exporters. Before joining the Green Star corporation in the fall of 1919, Mr. Benedict had been general freight agent for the New England Steamship Co. and assistant general freight agent of the New York, New Haven & Hartford railroad.

R. C. MCBAIN, treasurer of the Atlantic, Gulf & West Indies Steamship Lines, has been elected treasurer and director of the company's Mexican subsidiary, the Atlantic Gulf Oil Co., succeeding A. R. Nicol, president of the parent company. Mr. Nicol resigned from the oil company.

FRANK J. MCKIBBIN has been made traffic manager of the Texas Transportation & Terminal Co., Inc., 11 Broadway, New York, which operates services out of New Orleans, Galveston, Mobile and other southern ports.

JOHN T. DONNELLY has resigned as traffic manager of Compania Transmediterranea, 52 Beaver street, New York, which operates passenger and cargo steamers between Spanish ports and New York.

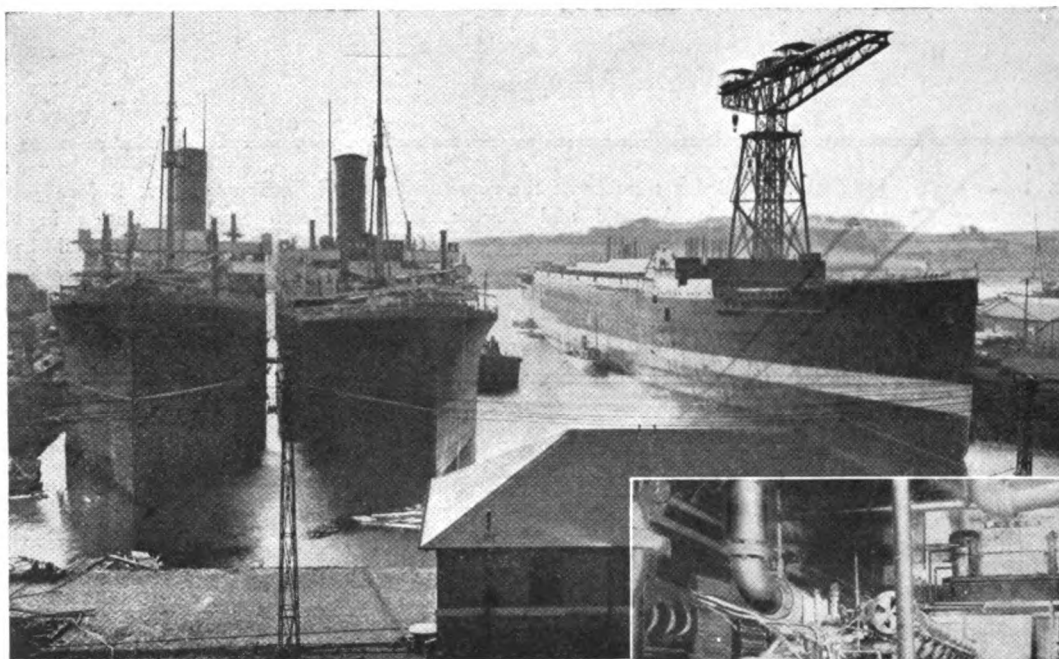
GEORGE A. HOEFFT has been elected president of the Armstrong Transportation Co., owner of a fleet of vessels and engaged in general brokerage, chartering and forwarding.

R. F. BIRD, freight solicitor for the Consolidated Freight Forwarding Co., Inc., formerly was manager of the New England Shipping Co. and at one time was with Davies, Turner & Co. and Caldwell & Co.

PAUL WEISS has been made manager of the New York office at 2 Rector street, of the Fahy & McNulty Co., San Francisco, freight brokers and general shipping agents.

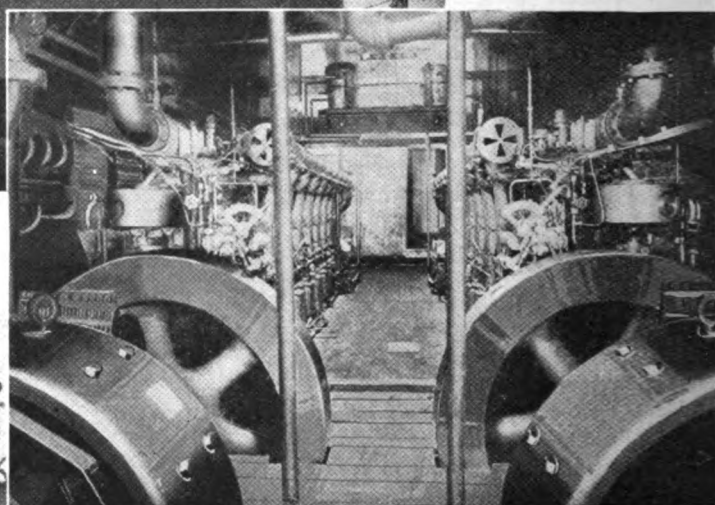
G. L. GUTHRIE, general agent of the steamship department of the American Express Co., in London, will succeed C. J. BRASOR, ocean traffic manager of the company in New York who will be transferred to the Orient as special traffic representative. He will leave New York about April 20, stopping at numerous points enroute and sailing from San Francisco May 10.

Photographs from Far and Near

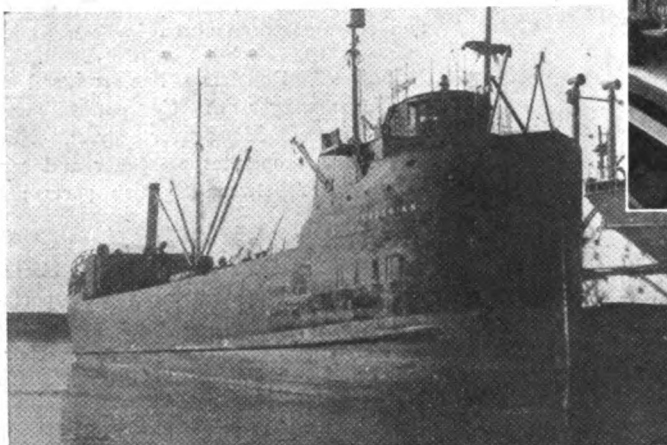


Fitting out basin of William Beardmore's shipyard, Dalmuir, Scotland, said to be the largest basin owned by any private shipbuilding company.

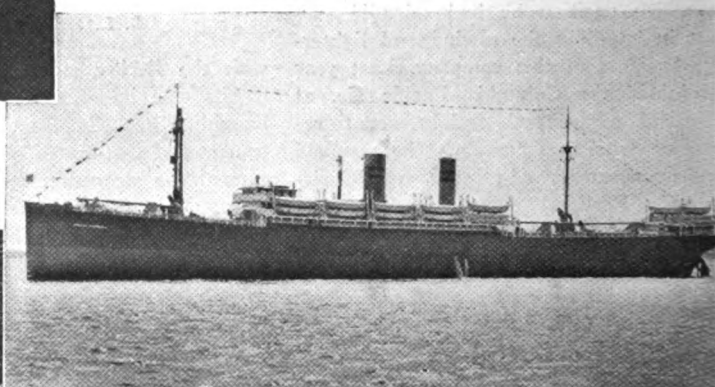
The Tyrrenhia (Cunard), Cameronia (Anchor Line) and Conte Rosso (Lloyd Sabauda) in the Beardmore yard.



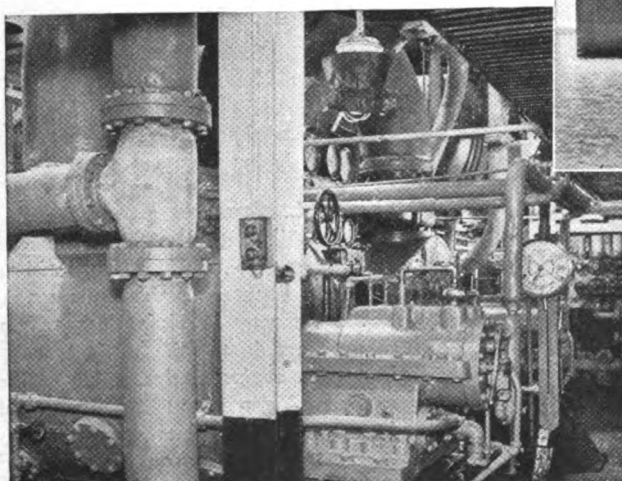
First large installation of a diesel engine and electric drive for cargo boats, in the Fordonian



The Fordonian is the first cargo ship in the United States equipped with a diesel engine and electric drive; likewise the largest ship so equipped



The Mount Carroll and her engine room, showing the turbine installation. She is a new, American-built passenger liner.

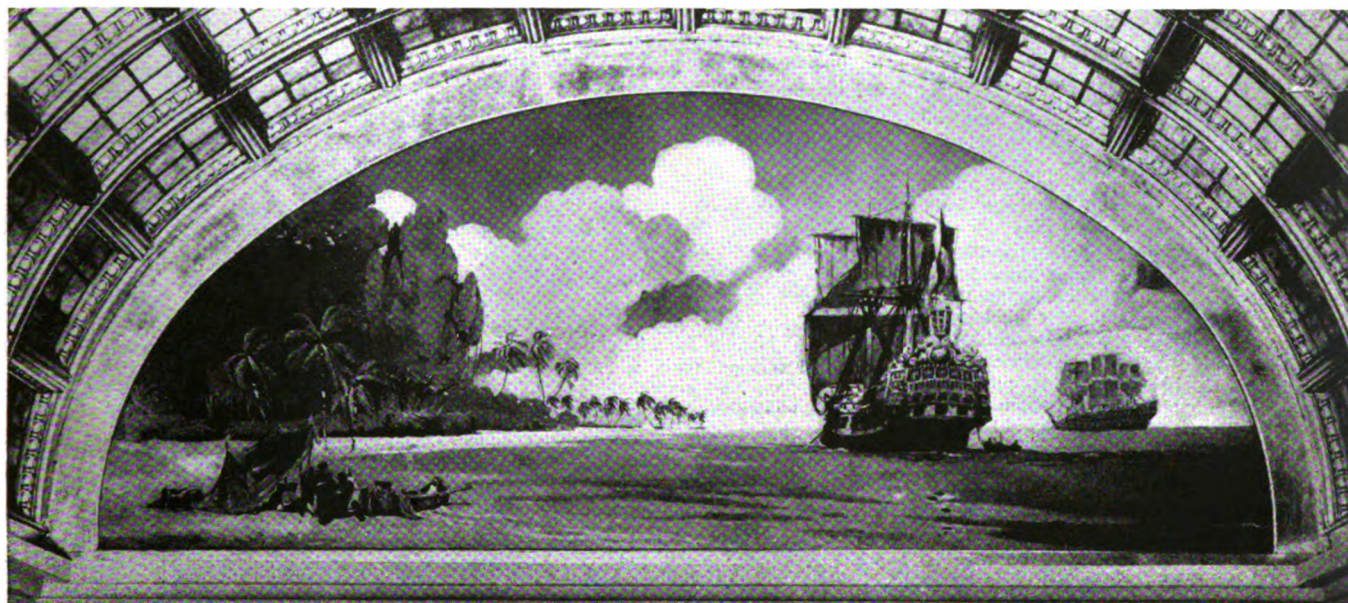


Latest Marine News in Pictures

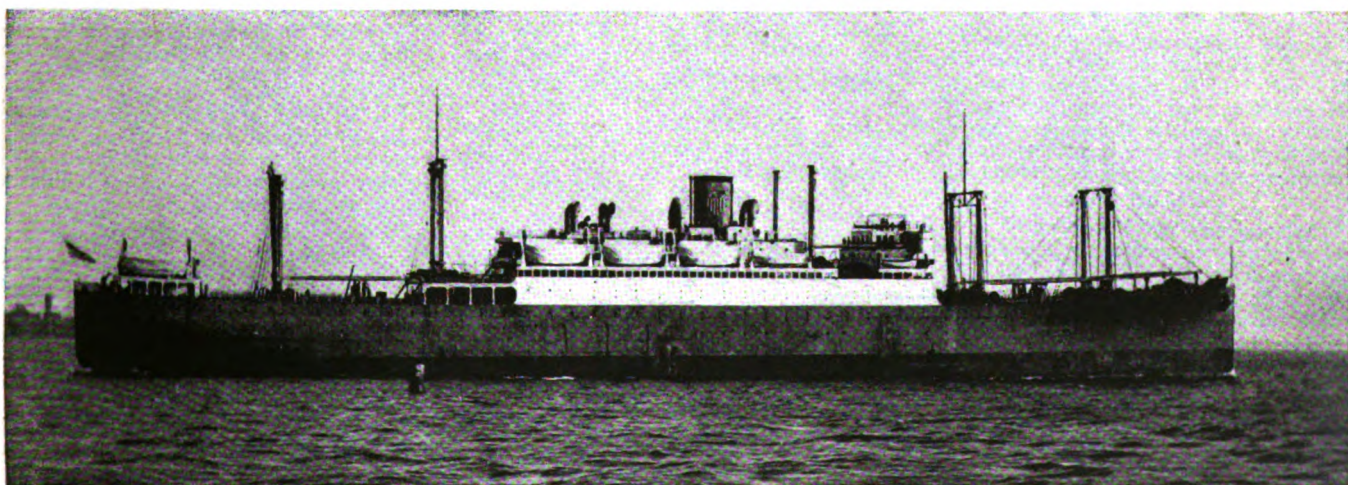
A depth of 500 feet is claimed for this new diving suit, made with body and head of armor plate and joints of rubber



When the crew is in this lifeboat, recently invented in Holland, it can be closed and thrown overboard, being "nonsinkable". There is room for about 30 persons. Successful tests have been conducted



The Hawkeye State is one of the recently built American passenger liners. She is 535 feet overall and is in service to Hawaii. The landing of Columbus is depicted in the fresco over the main stairway.



Activities in the Marine Field

Latest News From Ships and Shipyards

Early Opening Marks New Lake Season

LAKE shipping has opened quietly. the bulk fleet handling some early grain and coal cargoes. Some tonnage of ore will be shipped during April but the majority of the vessels will not be in commission before May 1. Passenger lines have started services. The mild winter left the lakes clear of ice, the first boats passing through the St. Mary's river without delay. The first vessel to lock through the Soo canal was the steamer **SIR THOMAS SHAUGHNESSY**. She locked through on April 7, the earliest opening of the canal since 1903.

Albert R. Rumsey, for years a notable figure in lake shipping, died March 27 of heart disease. He had been chief commissioner of the Lake Carriers' association for the past 20 years, a position which made him personally acquainted with practically every owner, operator, officer and member of the crew of the big lake bulk freighter fleet.

He had undergone throughout his life a wealth of experiences unmatched in the lives of a dozen ordinary men. These ranged from the part he played in the earlier history of lake shipping, through a wide variety of athletic activities up to his important work of the past 20 years in supplying men for lake vessels. He always took a keen interest in sports, having actively managed a number of boxers. Innumerable instances of his ability to handle men were furnished by his work as chief shipping commissioner. His brusque manner was backed by a sincerity which won and held thousands of friends. His death occurred at his home at Rumsey Park near Vermilion, O. In accordance with his expressed wishes, the funeral was held without flowers, without prayers, without music and without mourners.

Capt. Clarence Monroe, Bay City, Mich., has organized with a capitalization of \$12,000, the Valley Sand and Gravel Co., to operate the steamer **KEWAUNEE** on the Saginaw river and bay. Captain Monroe is manager of the company and master of the steamer.

The underwriters have named a rate of $3\frac{3}{4}$ per cent gross, or $3\frac{1}{4}$ per cent net pro rata for 1921 on hull insurance, the same as last season. The valuation of steel vessels for insurance remains the same also, or \$70 a gross ton.

The old lake steamers **BETHLEHEM** and **NORTHERN WAVE** were purchased by the United States shipping board at United States marshal's sale at Philadelphia re-

cently. The **BETHLEHEM** brought \$15,000 and the **NORTHERN WAVE** \$18,000. Before the boats were sent to the coast, the **BETHLEHEM** was operated by the Lehigh Valley Transportation Co., Buffalo, and the **NORTHERN WAVE** was owned by the Great Lakes Transit Corp.

The steamer **G. G. CRAWFORD** was placed in drydock at Lorain, O., recently for examination of her shoe and rudder, and the steamer **M. A. REEB** was docked at Buffalo for repairs to bottom damage.

The steamer **LIVINGSTONE** which was purchased by the Tristate Steamship Co. has been renamed the **WESTLAND**.

Plans are being formulated by the United States shipping board and the Chicago Steamship Lines, Inc. for inaugurating a new steamship line between Buffalo, Milwaukee and Chicago. The idea is for the board to lease to the latter company some of its steamer which are now idle in Atlantic ports.

Navigation was opened at Escanaba, Mich., on March 23 when the tug **ISABELLE C** arrived with a cargo of fish.

Edward P. Holler, assistant train master for the Pennsylvania railroad has been appointed to succeed V. H. Palmer in charge of the movement of lake coal.

The steamers **LAKELAND** and **WESTLAND** owned by the Tri-State Steamship Co., Cleveland, will be operated in the automobile trade this coming season.

H. S. Donaldson, superintendent of the Pittsburg Coal Co., has resigned to become assistant to the president of the Valley Steamship Co. J. P. Doyle who was assistant superintendent has been named to succeed Mr. Donaldson.

Capt. Edward Williams, master of the steamer **CITY OF BENTON HARBOR**, of the Graham & Morton fleet, died on April 6. He was on that line for 13 years and sailed boats for the Northern Navigation Co., Pere Marquette, and the Great Lakes Towing Co.

The steamer **D. J. MORRELL** was placed in drydock at Lorain, O., recently with 18 damaged plates.

The annual meeting of the Valley Steamship Co., Cleveland, was held on March 16, and the following officers were elected: John A. Donaldson, president;

William D. Becker, vice president; James H. Woods, secretary and treasurer; Hall Donaldson, assistant to the president; executive committee, James H. Woods, William D. Becker, Frank Seither; directors, John A. Donaldson, James H. Woods, William D. Becker, Hall Donaldson, James P. Walsh, Frank Seither and E. C. Morton.

The fish tug **LILLIAN A.** Northport, Mich., arrived at Mackinaw City on March 24. She was the first boat of the season through the straits.

The federal government will spend \$518,000 on improvements in the Detroit river during the coming year, according to an announcement made recently by Major General Beach, chief of government engineers.

The steamer **LYMAN C. SMITH** has been placed in drydock at Buffalo for repairs to grounding damage.

The steamer **J. H. SHEADLE** which went on the rocks at Marquette on Nov. 19 will be taken to a port of repair as soon as she can be moved. The steamer is badly damaged and it will be long after the opening of the season before she will be ready for business.

Fighting island south light will be changed at the opening of navigation to a flashing red of about 45 candlepower; Crisp Point light station to occulting white every 15 seconds, of 2000 candlepower; and Keweenaw Point, Sand Hills light station will show a group of two flashes every 30 seconds.

The steamer **J. J. HILL** was placed in drydock at Lorain, O., recently for bottom, shoe and wheel repairs.

R. C. Allen, vice president of the Lake Superior Iron Ore association has resigned to become affiliated with Oglebay, Norton & Co., ore shippers and mine operators.

The regular night service across the lake between Detroit and Cleveland was opened by the steamers **EASTERN STATES** and **WESTERN STATES** of the Detroit & Cleveland Navigation Co., Detroit, on April 4.

A relief light vessel will be placed on Lake Huron light vessel station at the opening of navigation. The ves-

sel will be a steamer with tubular mast surmounted by lantern with gallery; red hull, with middle section white; stack mast and lantern black; relief in black on each side. She will show light and will have sound fog signals

having the same characteristic as that of the station vessel.

The tug F. J. TOLLON, JR., owned by the American Boiler Works, Erie, Pa., was recently gutted by fire while docked

at Lorain, O. The damage is estimated at \$5,000.

The steamer W. S. CALVERT was recently placed in drydock at Toledo, to be given a general overhauling.

Along the Atlantic and Gulf Coasts

THE IMPERATOR, which was purchased by the Cunard Steamship Co. from the British government, will be renamed the BERENGARIA. In the selection of the name, the company has made a departure from its usual custom of calling its vessels after the classical names of the Roman empire.

A new tariff from Boston and New York to Havana and Santiago has been put into effect recently by the United Fruit Co. The new rates from Boston are lower than formerly on most of the regular shipments.

Four ships at the Charlestown, Mass., navy yard, the LONG BEACH and the ASTORIA, navy cargo vessels, and the cruisers CHESTER and GALVESTON, are to be taken out of commission, according to a recent report.

The pilot vessel INDEPENDENCE, an oil burner, built for the Block Island pilot service and owned by Capt. W. T. Dodge, William E. Dodge and Joshua T. Dodge was launched recently at Newburyport, Mass.

The 122-foot schooner L. A. DUNTON, designed as a defender of the international fishermen's race cup which was won by the Gloucester schooner ESPERANTO off the Canadian coast last year, was recently launched at the A. D. Storey shipyard, Essex, Mass.

The King Philip Steamship Co. has been incorporated at Boston for \$300,000. The directors are John J. Dixon, 729 Boylston street, Boston, president and treasurer, William F. McDonnough and James F. Casey.

Announcement is made by the United Fruit Co. that the steamship service between Boston and Cristobal, Panama, discontinued in December, was resumed recently with the sailing of the new steamer SAN GIL. The SAN GIL and the SAN BLAS will maintain the sailings.

The Canada Steamship Lines, Inc., Montreal, is contemplating establishing a regular passenger and freight service between Boston, Halifax, Port Hawkesbury and Charlottetown. It is proposed to maintain a weekly schedule of sailing with the steamers MANOA and KAMARIMA.

The passenger steamer NASSAU of the Highlands Navigation Co., 17 State Street, New York, recently left the dock of the New York Engineering Co., Yonkers, N. Y., where a new water tube boiler

of 2500 square feet heating surface, was installed. The passenger steamer SEAGATE, Frank V. Drake, captain, is alongside the company's dock at present, to receive a new boiler of the same size as that of the NASSAU.

Establishment of a passenger steamship and freight service between Halifax and Boston within the near future was announced recently by the Furness Withy Steamship Co., Halifax, N. S. The service will be opened with the steamship SACHEM, now undergoing repairs at Liverpool.

The New Orleans dock board, having received a strong protest from ship repair firms, other than the Jahncke Dry Dock & Ship Repair Co., and the Johnson Iron Works, Dry Dock & Shipbuilding Co., that they are unable to get locations on the river front for their plants and that the Jahncke and Johnson companies have such sites, has offered to allocate space, and to construct a wharf 600 feet long for the use of these repair plants, provided the plant owners will put up the funds necessary for the construction of this improvement, approximately \$70,000.

The Doullut & Williams Shipbuilding Co., Inc., launched the OLDHAM, eighth and last of the 9600-ton steel steamships built for the United States shipping board, from the company's yard on the inner harbor and navigation canal at New Orleans, March 19. The company is now devoting its attention to constructing seagoing tugs, steel seagoing barges and small steamers.

Ocean freight rates between south Atlantic and gulf ports and Cuba have been reduced 20 to 25 per cent to restore the former differentials which existed between these ports and Key West. The reductions were ordered in March as a result of the conference of steamship interests at St. Augustine, Fla., late in February. C. S. Fay, manager of the Southern Pacific Co. at New Orleans, said his company would meet the reductions agreed upon by the other lines.

Action suspending for 60 days from March 1 the present ruling of the New Orleans dock board allowing only seven days' free time for the accumulation of cargo on the public docks, and the substitution of a temporary ruling allowing 10 days' free time, was announced by the board March 2. This 10-day permit for the collection and classification of cargo, therefore, will be in effect until May 1, and, if the shipping interests of New Orleans can

accomplish it, will be extended thereafter.

The ruling of the dock board that a vessel calling at New Orleans for cargo must pay wharf charges of four cents a ton on her total tonnage from the date the ship is officially scheduled to dock, whether she arrives or not, is being stoutly contested by all the lines using the publicly owned wharves of the port. The dock board admits more than \$150,000 is due under this ruling from ships which have sailed without paying the rate which all the shipping interests consider exorbitant. About \$60,000 was collected under this ruling before the shipping interests decided to refuse to pay it. Now the dock board announces it will libel all ships owing such charges immediately on their return to port.

The New Orleans public coal tipple, which cost approximately \$1,000,000, has been insured for \$360,000 by the dock board. The statement is made that only one-half the tipple possibly could be destroyed by fire, which is why the small amount of insurance was taken out.

Two submarine chasers have been purchased by the port of New Orleans from the United States navy for fire and police patrol duty.

Statistics compiled late in March by the New Orleans Association of Commerce show that 4173 vessels, with net tonnage of 9,454,802, entered and cleared New Orleans in 1920, compared with 3308, with total net tonnage of 6,611,078, during 1919. In 1920, the American tonnage formed 53.8 per cent; in 1919, it formed 50.8 per cent.

The J. H. W. Steele Co. announces that the Osaka Shosen Kaisha, the Japanese steamship line for which this company is agent in New Orleans, has named one of its steamers the NEW ORLEANS MARU. She will be operated between New Orleans and Yokohama, via the Panama canal.

The Jahncke Dry Dock & Ship Repair Co. has installed a steel 150-foot fire tug, the BAYSIDE, in New Orleans harbor. This tug was built by the Emergency Fleet corporation and came to New Orleans from New York under her own power. She is equipped with engines of 1200 horsepower and is an oil burner.

The Johnson Iron Works, Dry Dock

& Shipbuilding Co. has just completed two 9100-barrel steel, seagoing oil barges for the New England Fuel Co. of Maine. The barges are 200 feet long, 42 feet beam, with draft of 3 feet 3 inches. They will be used for handling oil from Tampico, Mexico, to

this company's refinery on the Atlantic coast.

* * *

The Louisville & Cincinnati Packet Co., which recently announced regular service between Cincinnati and New Orleans

on the river steamer *QUEEN CITY*, has abandoned the plan because of lack of cargo offered, according to Capt. E. W. Roe, master of the steamer, who declared that the "attempted revival of steamship traffic on the Mississippi river has failed."

Activities Along the Pacific Coast

THE opening of a new epoch in the annals of the north Pacific shipping took place on April 9 when passenger service to the Orient was resumed from Puget sound. This service was inaugurated by the steamship *WENATCHEE* assigned by the shipping board to the Pacific Steamship Co. Since the giant *MINNESOTA* was withdrawn from the Pacific, Puget sound has had no American passenger steamers. For eight years, the *MINNESOTA* was the only American liner plying to the Far East so that the new service means re-establishment of the Stars and Stripes on the north Pacific. The *WENATCHEE* was given a warm welcome and many unique features marked her arrival. The Pacific Steamship Co. booked a full cargo for the new liner including a shipment of Washington wheat contributed by people of that state as a personal gift to the starving population of north China. Among many distinguished passengers were Maj. Gen. Leonard Wood enroute to the Philippines. *Wenatchee*, Wash., sent a delegation to greet the fast vessel named after that city.

* * *

The first repair contract taken by the Puget Sound navy yard in some time was recently completed on the shipping board steamer *CITY OF SPOKANE* upon her return from the Orient. The freighter was docked at the navy yard two weeks undergoing cleaning and overhauling.

* * *

Because the Norwegian steamer *Rio GRANDE* lost her coal charter from Norfolk to Norway, the owners sent the freighter to the Columbia river in ballast to load wheat at the season's low rate of \$10.50. It was figured that this course involved a smaller loss than accepting \$4.50 per ton on the Atlantic or \$2.50 offered for a spot coal ship.

* * *

The 600-ton steamer *MIDGET* has been allocated to the Pacific Steamship Co. as a feeder for its Manila service. The *MIDGET* is a former German freighter and has been operated in the inter-island trade by the Philippine government during the last four years.

* * *

After being idle in Seattle for two months, the shipping board steamer *WEST HARTLAND* was cleaned and painted at Todd Dry Docks, Inc., preparatory to loading a cargo of railroad ties at Vancouver, B. C., for India. The Todd plant at Seattle has had a fair run of spring service this year.

* * *

A. M. Dollar of the Robert Dollar Co., has returned to Vancouver, B. C.,

after a trip to England where he purchased the 16,000-ton steamer *KURLAND*, formerly German, for his firm. He reports shipping very slack in Great Britain and on the continent where ships may be purchased at the buyers' price.

* * *

Receivership for the well known shipping firm of Gaston, William & Wigmore, New York, was brought about by an equity action instituted by the E. W. Summer Co., Seattle. The latter firm seeks to collect \$60,000 said to be due on contracts for the construction of marine fuel oil engines. It is alleged that the New York company refused delivery of the engines after they had been manufactured.

* * *

The schooner *ADMIRAL MAYO*, of the Admiral line's fleet, recently returned to Seattle in tow after a strenuous career. This wooden vessel was built in Seattle and soon after being purchased by the Pacific Steamship Co. left Puget sound two years ago as an auxiliary powered schooner. Upon reaching Australia it was deemed advisable to remove the propellers and under sail she returned to the Pacific coast via South American ports. She was towed from San Francisco to Seattle.

* * *

Because it is claimed she is too costly to operate, the Nippon Yusen Kaisha has decided not to use the former German express liner *CAP FINISTERE* in the Oriental route out of Seattle. On a voyage from London to Japan, the *CAP FINISTERE* is said to have established a record for high operating costs. She has been chartered by the Toyo Kisen Kaisha for service between the Orient and San Francisco.

* * *

The steamship *EDMORE* formally opened the new publicly owned port of Tacoma on March 25 when she began to load 600,000 feet of lumber for the Orient. With the completion of Pier No. 1, the Port of Tacoma has expended \$1,575,000.

* * *

Out 141 days from Vavua, Tongo islands, the schooner *HARVESTER* has been given up as lost. The vessel was bound for San Francisco with a cargo of copra. She was formerly operated as a cannery barge out of Seattle but during the demand for vessels three years ago she was sold and re-rigged as a 4-mast schooner.

* * *

Three power schooners will shortly leave Seattle for their annual trading

cruises into the Arctic along the Siberian coast. They are the *BENDER BROS.*, *CHUKOTSH* and *KAMCHATKA*. They will carry supplies to the trading stations and return with furs from the Far North.

* * *

There are at present no labor troubles among the longshoremen in Seattle. Work has not been plentiful this winter, and the men are only too anxious to get employment. During the war time rush, many stevedores averaged \$300 per month in wages. In January, the average earnings of these men was \$68 and in February slightly over \$70.

* * *

Refrigerator service furnished by the Holland American liners has proved a boon to the apple growers of Washington. Since last October 112,500 cases of Washington apples have passed through the port of Seattle consigned to Great Britain and northern Europe.

* * *

First of the freighters built in China for the shipping board the *MANDARIN* has arrived at San Francisco after a voyage of 22½ days from Shanghai. The *MANDARIN* is temporarily laid up awaiting cargo. Three other vessels of similar type are to be delivered by Chinese builders to the shipping board.

* * *

Bonds amounting to \$600,000, running five years at 6 per cent, will be sold by the port of Portland to raise money with which to pay for the reconstruction of the dredge *COLUMBIA* and to provide funds for dredging operations.

* * *

During the last month the Lake Washington locks, Seattle, have lifted the two largest vessels that have yet entered Lake Union where they sought fresh water anchorage. These ships were the 9000-ton *BROOKLINE* and the 8000-ton *ORANI*. Both freighters were sent into the lake to await cargoes. The *ORANI* has since left for Portland to load grain.

* * *

Establishing agencies along the west coast in charge of experienced American traffic men has been found very successful by the General Steamship Co. operating to Central America, Peru and Chile. This plan has resulted in increased business and better dispatch for the line's vessels.

* * *

Max Kalish, for 40 years connected with north Pacific shipping, died recently at San Francisco. Mr. Kalish was a veteran purser who for years operated the steamship *HUMBOLDT* between Seattle and Alaskan ports.

Practical Ideas for the Engineer

How Wireless Is Applied in Solution of Navigational Problems—Finishing Propellers—Big Ship Drydocked

ANNOUNCEMENT that wireless stations will be established at strategic points on the Great Lakes for the special service of shipping, directs attention to the enlarging role wireless is playing in navigation. The importance of wireless as a means of summoning aid to disabled ships already is writ large on the pages of marine history. And in ways less dramatic and less spectacular, wireless is playing new and increasingly important parts in promoting the safety of navigation, and revolutionizing the routine of life aboard ship.

Prior to the advent of wireless, determination of Greenwich, or first meridian, time was one of the most difficult tasks that troubled the navigator. Every master of a seagoing ship was supposed to carry a chronometer of his own, a rather expensive instrument considering the salaries paid master mariners some years ago. Every self-respecting owner supplied his ships with one or more chronometers. And careful masters insisted these chronometers be wound up at precisely regular intervals and compared daily at the same hour. The working out of rates and differentials required regular attention of the second officer, and allowances had to be calculated for variations in temperatures.

In ports, comparisons had to be made with time balls; and these did not always give the time with a maximum exactitude. In ports where no time balls were maintained, the second officer with a stop watch hied to the telephone to get the standard time. And to induce the "hello" girl to give the time to a second required diplomacy and patience. In far ports, where time was of no particular object to the natives, the only way to determine it was by means of lunars. These required special conditions in regard to the juxtaposition of the heavenly bodies, as well as of the weather, three sextant observations by two or preferably three expert observers, and an intricate series of calculations.

Today, the wireless has solved the problems of time at sea. Chronometers have not been superseded, but with wireless and a good watch, the navigator has no need to worry over the possible errors of his chronometer rating. Every hour the wireless signals the Greenwich, or first meridian, time and, with an ordinary watch, the navigator easily can

determine the error of his chronometer or whatever timepiece he uses, when taking sights for longitude. Undoubtedly, wireless has in this connection contributed an important aid to navigation, one which has lifted a burden of worry from the shoulder of the master and his navigating officers.

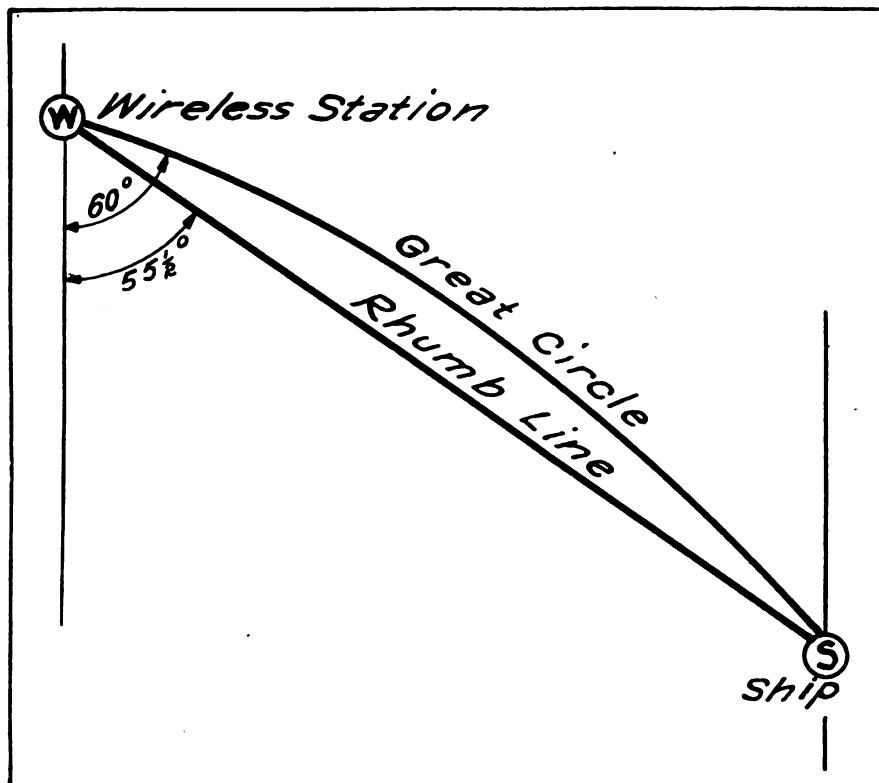
In the development of directional wireless, we have another important aid to navigation. Most wireless stations at strategic points now are equipped with apparatus enabling them to tell the bearing of the starting point of wireless waves sent out by ships having proper appliances.

Direction finders are a comparatively recent development of wireless, and have not yet attained a satisfactory degree of accuracy; but they probably will be improved. Instruments generally employed now have a range of 300 miles. According to the British admiralty notice to mariners No. 952, 1920, a shore station, with practiced operators and instruments in good adjustment, should be able to give a bearing during the day, the maximum error of which should not exceed two degrees. But it should be noted that at night errors may be larger,

although sufficient data on this point are not yet available. It is obviously easier to check the accuracy of a wireless bearing by day than by night.

When a navigator seeks to fix his ship's position by means of wireless bearings, the procedure is similar to that employed in fixing his position by means of bearings of visible objects. If the distance of the wireless station is not more than 60 miles, the bearing may be plotted on a Mercator's chart as given, and the position shown will be approximate enough for practical purposes. But if the distance of the station exceeds 60 miles, allowance has to be made for curvature of the earth, or there will be an error increasing with the distance.

As the course of a wireless wave follows the track of a great circle, it will be represented by a curve, when plotted on a chart on Mercator's projection, a curve which is concave towards the equator. It will show the greatest concavity, when it runs east and west and flatten out as the bearing changes towards north and south. Except when the bearing of a wireless wave is north or south—that is on a meridian—it cuts



METHOD OF CORRECTING BEARINGS GIVEN BY WIRELESS

the meridians shown on a Mercator's projection at a slightly varying angle. It is this angle that has to be allowed for in plotting bearings directly on such a chart. Gnomonic charts now are published on which a great circle track is represented by a straight line; but these are not in general use.

Assume the Cape Race wireless station is located in latitude 52 degrees 00 minutes, north, and longitude 50 degrees 00 minutes, west, a ship, whose position by dead reckoning is latitude 48 degrees 00 minutes, north, and longitude 38 degrees 00 minutes, west, is given her wireless bearing from the station—what it is, is immaterial for the purpose of this illustration and I have neither charts nor nautical tables at hand. The problem is to find the correction to this bearing, so that the navigator may lay his protractor or parallel rulers on the wireless station and determine his line of position.

To find this correction the British admiralty gives the following formula: Correction (in minutes) = ($\frac{1}{2}$ difference in longitude) X sine (middle latitude).

It may be noted that some merchant captains use the sine of the latitude on the station, instead of the middle latitude between the ship and the station, and claim that their formula gives results of greater accuracy than that of the British admiralty.

In the above example the middle latitude between the position of the wireless station and the dead reckoning of the ship would be 50 degrees 00 minutes, and the difference of longitude would be 12 degrees. Thus, corrections (in minutes)

$$\begin{aligned} &= \frac{1}{2} \times 12 \text{ deg.} \times \sin. 50 \text{ deg.} \\ &= 360 \text{ deg.} \times \sin. 50 \text{ deg.} \\ &= 275.8 \text{ min.} \\ &= 4 \text{ deg. } 35.8 \text{ min.} \end{aligned}$$

This can be worked out also by the traverse table, taking the difference in longitude as distance, the latitude as course, then the departure will be the correction.

Having the correction of 4 degrees 35.8 minutes the problem now is to determine how it will be applied to the bearing given by the wireless station. A great circle represented on a Mercator's chart being a curve concave to the equator, a wireless bearing taken from a station in the northern hemisphere should be corrected as to make it more southerly before being plotted on the chart. Suppose, Cape Race had informed the ship that her wireless bearing was south 60 degrees 0 minutes east. Then the bearing or rhumb line to be laid off from Cape Race on a Mercator's chart would have been south 60 degrees 0 minutes, east, minus 4 de-

grees, 36 minutes, or say, south 55 $\frac{1}{2}$ degrees east.

This bearing, plotted on Mercator's projection, would give a line of position which for short distances on either side of the dead reckoning, may be taken as representing the arc of a great circle, on which the ship is located. If a wireless bearing can be obtained from another station and another line of position laid off, the intersection of the two fixes the position of the ship in the same way that cross bearings of visible objects do, though it is subject in a far greater degree to errors.

It is, however, a very difficult matter to plot long distance bearings on a chart. If you do not believe this take protractors or parallel rulers and try it on a larger chart. Various methods of plotting great circles on a Mercator's chart are available, and it is possible to plot a wireless bearing in the same way, but the results are likely to be disappointing.

The best plan in dealing with wireless bearings is to figure out the position, where the great circle cuts the dead reckoning latitude or longitude, and start from this as a basis of the chart work. This can be done by Mercator's sailing, either by computation or interpolation of the traverse tables, which generally are worked out to distances of six hundred miles. Take the wireless bearing as a course and, with either the difference of latitude or longitude between the position of the wireless station and the dead reckoning position of the ship, it is an easy matter to find the other element you want. If you have not been able by recent observation to determine one or the other element in

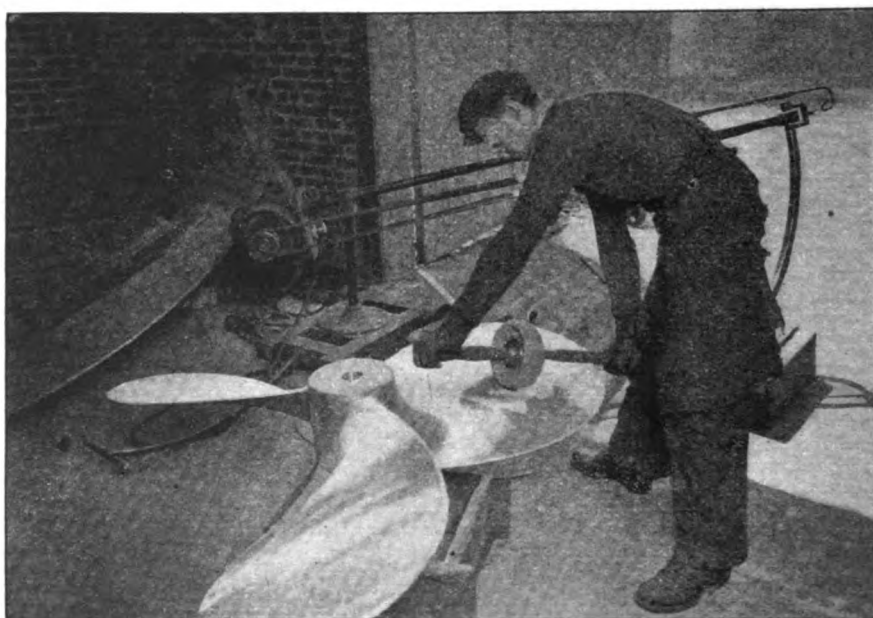
the dead reckoning position, an adaptation of the Sumner method can be employed to advantage. With the wireless bearing as a course, calculate the latitudes for assumed longitudes 30 minutes or one degree on each side of the dead reckoning longitude, plot these positions on the chart, and draw a line through

All the methods of fixing a ship's position not as valuable, perhaps, as a Sumner line of position marked out from the sun, but useful to the extent the wireless bearing can be depended on.

All the methods of fixing a ship's position by bearings of visible objects can be employed in the case of wireless bearings. As the ship proceeds, she can receive additional bearings and these worked out and plotted on the chart, with the course and distance and run between them, will enable the navigator to determine his position with a precision only dependent upon the accuracy of the wireless bearings. Where the ship is in soundings, a line of position given by a wireless bearing may be of first importance, but confidence in fixes determined by directional wireless should never lead the navigator to neglect the lead. Probably more ships have come to grief from failure to make use of the lead than from any other single cause.

Finishing Propellers With Abrasives

Abrasives play an important part in the manufacture of marine equipment as they furnish a ready means for finishing surfaces that under ordinary conditions cannot be



FINISHING THE BLADES OF A BRONZE PROPELLER WITH A FLEXIBLE-SHAFT GRINDER



BIG TRIPLE SCREW LINER DROTTNINGHOLM

machined without employing special equipment. Such an instance is shown in the accompanying illustration where the operation consists of finishing the blades of a bronze propeller. The blades should be smooth; otherwise the entire energy available is not utilized in driving the vessel through the water. Rough blades drag to a certain extent, that is, they carry an abnormal amount of water with them as they revolve. On the other hand, a propeller with smooth blades operates at high efficiency as the maximum amount of energy is utilized in propelling the vessel. In this instance, an excess amount of dead water is not rotated by the propeller.

The device shown in the accompanying illustration is a flexible shaft grinder made by the Stow Mfg. Co., Inc., Binghamton, N. Y. The device is driven by an electric motor mounted on the end of an arm while a pedestal supports the unit on a substantial base that is readily moved from place to place. Power is transmitted by a flat leather belt to a pulley at the end of the arm while a flexible shaft transmits power from the pulley to the grinding wheel arbor. In this case the abrasive medium used is a setup polishing wheel. With the propeller in position as shown, the operator can face one side of all three blades. Then by turning the propeller over, the other side is finished.

Another advantage in favor of polished propellers is that they do not become foul under ordinary conditions as the smooth surface does not afford a good hold for marine growths. The operation illustrated is one of many where a flexible shaft grinder can be utilized to advantage in grinding and polishing parts that are unwieldy.

Drydock Big Ship

Unusual drydocking plans were necessary when the triple-screw, Swedish-American liner DROTTNINGHOLM was raised recently in the 30,000-ton floating drydock of the Morse Dry Dock & Repair Co., Brooklyn, N. Y.

This ship was never before raised on this side of the Atlantic as her deep draft and peculiar build, offered unusual difficulties. Some doubt was felt of the ability to raise the DROTTNINGHOLM on a drydock of the floating

war she was put in service as a transport and auxiliary cruiser. While in this service she was torpedoed and sunk off the Irish coast in 1918. After the war, she was raised and in April of last year was taken over by the Swedish-American line.

She has been completely reconditioned and refitted throughout with every facility for the pleasure and comfort of her passengers. An unusual feature is that she has no steerage, and instead all third-class passengers are accommodated in cabins for two to six persons. Her



BIG SWEDISH LINER BEING TOWED TO HER PIER AFTER DRYDOCKING AT THE MORSE PLANT

type, but the vessel was warped in over the sunken platform, carefully blocked up, and within 35 minutes after the pumps were started, she was high and dry.

The DROTTNINGHOLM is built on the ocean greyhound type with the least possible bulk under water. Her wedge-like shape and towering height furnished a sharp test of drydocking facilities.

Before becoming the property of the Swedish-American line, the DROTTNINGHOLM was the English ship VIRGINIAN owned by the Allan line. During the

regular run is now between Goteborg, Sweden, and New York.

The DROTTNINGHOLM is 514 feet long, 60 feet beam, 11,000 tons deadweight, carries 1500 passengers and draws 31 feet of water. She has a speed of about 17 knots.

The British steamer CANADIAN PROSPECTOR of the Canadian Merchant Marine, Ltd., recently discharged 4000 tons of wool from Australia at Seattle, this being the first liner of this new service to enter Puget sound.

Equipment Used Afloat, Ashore

Grinder for Marine Work—Automatic Towing Winch

CONSTRUCTION work in shipyards and in marine engine building and repair shops involves many plane surfaces that can be finished to advantage by grinding, as the services of a highly skilled mechanic are not necessary. The machine shown in the accompanying illustration is an oscillating head surface grinder manufactured by Alfred Herbert, Ltd., Coventry, England, and distributed by the company's New York agency.

This unit will accommodate work 24 inches long and 10 inches wide. The grinding wheel head is mounted on a substantial swinging arm, the base of which comprises two trunnions, each carried by a broad journal on a shallow box-section bed. The arm is free to oscillate in its bearings, being actuated by a connecting rod which is operated by a crank on a 3-speed gear box. By adjusting the crank throw, the oscillating stroke, at a radius represented by the center of the grinding wheel, can be varied from 0 to 24 inches.

The grinding wheel head consists of a 16-inch, 8-segment cup wheel mounted on a ball-bearing spindle which is carried on a ram having an adjustment parallel with the axis of oscillation of the swinging arm. This adjustment feeds the wheel to the work. It is controlled by a hand wheel on the gear box and can be operated when the arm is in motion. The wheel segments are 6 inches long and they can be used until they are reduced to 1½ inches, if care is exercised in locating them in the chuck.

The spindle drive is by a belt from a self-contained countershaft, which is located on the center of oscillation of the swinging arm. The drive is supported by bearings in the trunnions and also by a bearing on the bed. The work

is located on a substantial platen which is provided with five T-slots. A water pump on the countershaft supplies solution for wet grinding. Three speeds of oscillation are provided for different lengths of wheel stroke. The machine weighs approximately 8100 pounds and occupies a floor space of 9½ x 6¾ feet, while 20 horsepower is required for operation.

Big Panama Repair

The steamship *SUSSEX*, of the Federal Steam Navigation Co.'s service, which ran aground in Limon bay, Panama, in January, has been repaired. The work of drawing the *SUSSEX* off the breakwater took a week, and over 1700 tons of cargo were removed from her Nos. 1 and 2 holds into lighters before the vessel could be pulled off by the tugs *GORGONA* and *TAVERNILLA* and the salvage steamer *FAVORITE* of the Panama canal service. The *SUSSEX* was then taken through the canal to go into drydock in the 1000-foot dock at Balboa.

As a preliminary to the drydocking, the bottom of the *SUSSEX* was examined by a diver, to ascertain the extent of the damage and to see that no damaged portion of the hull would interfere with a proper landing on the keel blocks.

The damage itself extended from the forepeak to about the center of No. 1 hatch, approximately 45 plates have been removed, 36 of which were so badly torn or dented as to require renewal. A new section of stem from the scarp at the 26-foot line to the keel plate was forged and installed. All of the frames in the forepeak have been renewed and two frames in No. 1 hold renewed, the balance straightened

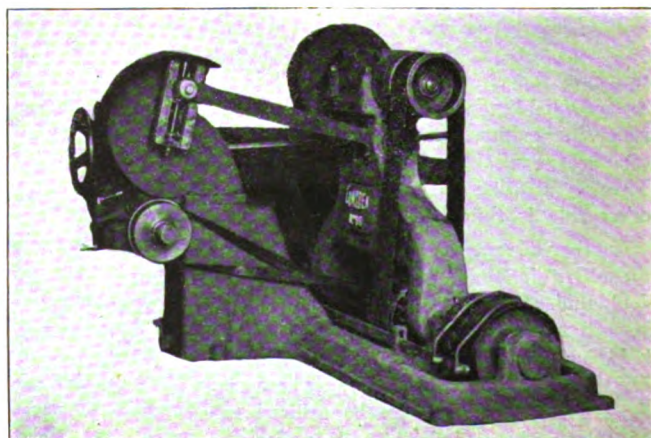
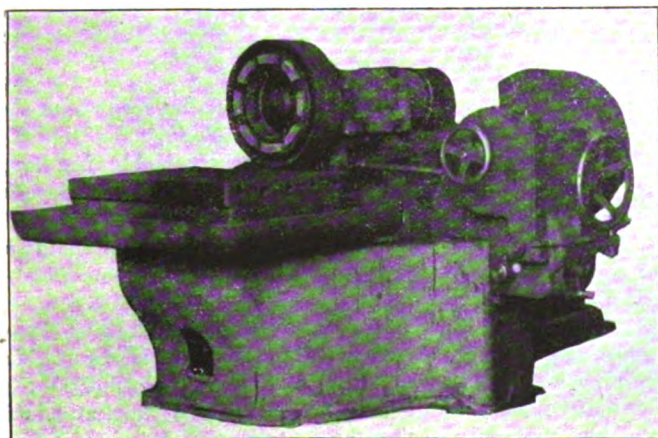
and stiffened by the installation of new reverse bars. This describes only in a limited way the work required, as, in connection with this, a number of miscellaneous items must be handled at the same time, such as No. 1 tank top, margin plate, bilge brackets, stringers, breast hooks, collision bulkhead, etc.

Incident to this work the ship has been under special survey and has had all sea valves overhauled, tail shaft drawn for examination of the stern bearing, rudder lifted, steering gear overhauled, several pumps repaired, bilge and ballast lines to the No. 1 tank overhauled, deck winches and anchor windlass examined, cables ranged and inspected, rails straightened, and minor repairs in other respects on equipment or fittings which usually become more or less strained or damaged as a result of grounding and wrecking operations. The case emphasizes the value of the facilities maintained by the canal for the assistance and repair of vessels in distress.

Late Marine Patents

Copies of any one of these patents may be obtained by forwarding 25 cents in stamps to Siggers & Siggers, patent attorneys, National Union building, Washington, mentioning *MARINE REVIEW*.

- 1369058—Lookout device, Alfred O. Tate, New York.
- 1369132—Adjustable inclined davit, Ane P. Schat, San Francisco.
- 1369133—Automatic davit, A. P. Schat, San Francisco.
- 1369289—Life raft, Arthur W. Lyda, North Canton, O.
- 1369670—Boat, John A. Kauffman, Washington.
- 1369588—Protection of ships against torpedoes, L. E. Whiton, New London, Conn.
- 1369587—Apparatus for protecting ships against torpedo attacks, L. E. Whiton, New London, Conn.



WORK IS STRAPPED TO A FIXED PLATEN WHILE THE WHEEL OSCILLATES PAST THE SURFACE TO BE FINISHED

1369586—Protection of ships against torpedo attacks, L. E. Whiton, New London, Conn.

1370204—Range keeper, Hannibal C. Ford, New York, assignor to Ford Instrument Co., Inc., New York.

1370458—Submarine salvaging apparatus, Carl J. Lindquist, New York, assignor to Submarine Salvage Co., New York.

1370959—Boat, John C. Green, Houston, Tex.

1371492—Rudder operating gear, John G. A. Kitchen, Scotforth, Lancaster, England, assignor of one-half to Gordon H. Fraser, Liverpool, England, and James Ryder O'Hanlon, Westwold, Blundellsands, England.

1371728—Submarine sound detector, Theodore Bodde, Lynn, Mass.

1371896—Lifeboat, Arthur P. Horn, Cincinnati.

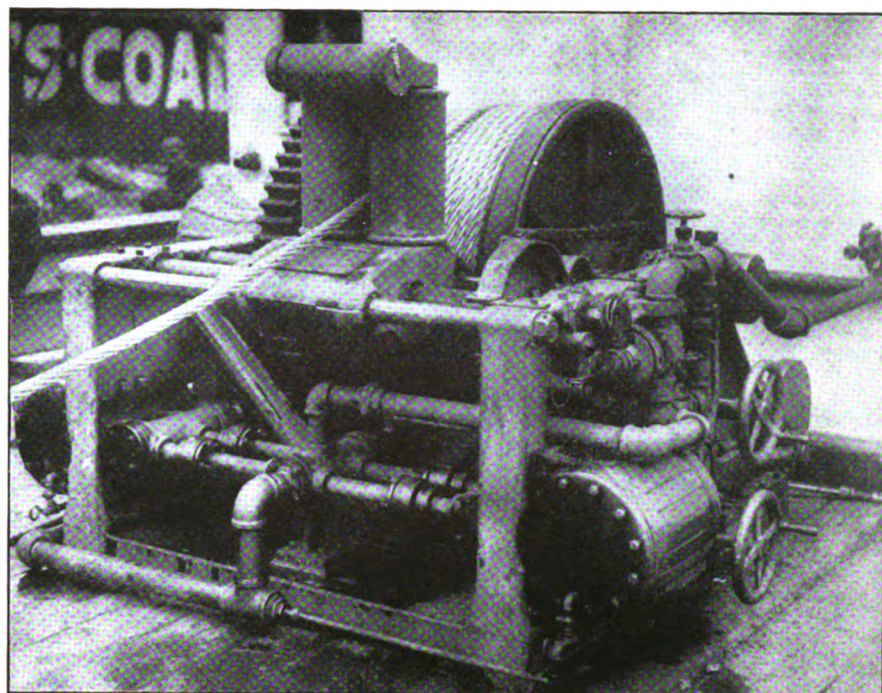
1371986—Boat, Frank J. Stiles, Coconut Grove, Fla.

Automatic Towing Winch

A steam towing winch for which many advantages over other existing types are claimed, is made by the Corbet Foundry & Machine Co., Owen Sound, Ont.

An important feature is a spool, which can be operated independent from the drum by means of a friction between the gear and drum, thereby enabling the machine to serve two purposes at one time.

The winch is operated by one lever, which starts, stops and reverses, and requires only one man to operate it. These machines are equipped with the automatic hawser leader or guide, which travels to and fro across the front of the drum while the cable is going out or in, thereby preventing the hawser from climbing on the drum. These machines have also a friction between the drum and the gear, which enables the engines and spools to be operated



AUTOMATIC STEAM TOWING WINCH

independent of the drum while under way towing.

The machines are also equipped with the automatic release and takeup valve which prevents the parting of the hawser and losing the tow.

Louisiana is to be asked to purchase the Bayou St. John, a semiartificial waterway penetrating the heart of New Orleans from the business district. A special commission appointed by the state

to put a valuation on the canal and the 150-foot right of way which accompanies it, has fixed the price at \$300,000. It is expected the state will pay the price and take over the canal, which is important commercially, running into the city from Lake Pontchartrain. The artificial extension of the old bayou was started by Baron Carondelet, more than 100 years ago, with the idea of connecting the Mississippi river and Lake Pontchartrain.

Business News for the Marine Trade

Capitalized at \$1,000,000, the Machado Turbine Corp., 111 Broadway, New York, recently was incorporated to engage in the manufacture of a reversible turbine for ship service. The turbine is the invention of Pedreira Machado. It is reported the company is planning to establish a works for the manufacture of the invention.

The bureau of yards and docks, navy department, Washington, will install a crane and crane runway at the Brooklyn navy yard.

Stephen Ransom, Inc., 518 Hamilton avenue, Brooklyn, N. Y., operating a marine repair works, recently had plans prepared for erecting a 4-story brick addition to its plant, to be 99 x 244 feet, and cost about \$300,000.

The bureau of yards and docks, navy department, Washington, will install electric hoisting equipment and an electrically operated platform at the new aircraft plant at Lakehurst, N. J.

The National Boiler Co., South avenue, Garwood, N. J., manufacturer of steam and hot-water boilers, has had plans prepared for the erection of a 1-story addition to its plant, 34 x 86 feet, to cost about \$13,000.

The war department, Washington, has taken over a waterfront site at Mobile, Ala., to be used

for constructing a new coal-handling plant for Mississippi-Warrior river service, providing for material coming from the Alabama fields. The plant will include a tippie with loading and unloading machinery, conveying equipment, etc., and it is estimated, will cost about \$400,000.

The Bridgeport Boiler Works, Bridgeport, Conn., is considering the erection of a plant building, 60 x 80 feet, at its proposed dock at 202 Housatonic River street.

In connection with its proposed fuel oil storage and bunkering station at Craney Island, Norfolk, Va., the shipping board, Washington, is planning for the construction of twenty 50,000-barrel oil tanks, with connections, piping, etc. Pumping machinery and other equipment will be installed.

The Burley Welding Works, 20-22 Kosciusko street, Brooklyn, N. Y., manufacturer of welding apparatus, equipment, etc., has had plans prepared for erecting a 3-story factory building addition, 40 x 100 feet, to be built at an estimated cost of \$20,000.

The Theodore A. Crane's Sons Co., Brooklyn, N. Y., operating a shipbuilding plant and drydock at the foot of Columbia street, is installing an electrically operated drydock at its

works, and proposes to have the addition ready for service in the fall. The new dock will accommodate vessels up to 500 feet in length, with gross tonnage of 11,000 tons. It will be built in four sections. The pumping installation will consist of centrifugal units, all motor-driven.

B. S. Muir, Collingswood, N. J., has awarded a contract to T. H. Miller, 3719 Westfield avenue, Camden, N. J., for erecting a new machine shop and repair works, to be 30 x 60 feet.

The Cowles Marine Salvage & Mfg. Co., 532 South Green street, Chicago, has been incorporated with a capital stock of \$250,000, by John T. Cowles, M. E. Harwich and James D. Davidson, to manufacture machinery to raise and salvage sunken ships.

The Duplex Boiler Co., Inc., 30 North La Salle street, Chicago, recently was incorporated with a capital stock of \$25,000, to manufacture duplex water tube boilers of the 2-drum type, ranging in size from 100 to 1000 horsepower. It has arranged with James Heggie & Son, Joliet, Ill., to build the boilers under contract. The officers are T. H. Burton, president, and R. L. Baker, secretary-treasurer.

The George Naismith & Son Co., Pittsburgh

is being organized by George and Donald McN. Naismith and Edward C. Blumer, to manufacture boilers, furnaces, etc. F. R. Stoner, 1621 Oliver building, Pittsburgh, represents the company.

The bureau of yards and docks, navy department, Washington, is planning to construct a 1-story machine shop at the naval base at Hampton Roads, Va. A machine and repair works will also be erected by the department at Anacostia, near Washington.

The Pilkington Boat Yards, Miami, Fla., is planning improvements to its plant to include the remodeling of present buildings and installation of new equipment. A marine railroad will be constructed and hoisting machinery installed.

B. H. Elliott, Inc., Houston, Tex., recently organized to operate a shipyard, has plans under way for establishing its initial plant at Harrisburg, Tex. It will be used primarily for repairs and will comprise a machine shop, 60 x 100 feet, and other buildings. B. H. Elliott is president and manager of the company.

The W. H. C. Aircraft Co., Inc., Lynn, Mass., recently was incorporated to build airplanes, hydroplanes and flying boats, with a capital stock of \$25,000, by W. S. Walker, Thomas T. Harvey and S. Charles M. Cummings.

The Shawmut Marine Co., Lynn, Mass., plans a number of buildings which will go to make up a small boat manufacturing plant. The first structure will be 1-story, 60 x 150 feet.

The J. Comer Jones Power & Pump Co., Boston, has been incorporated with a capital stock of \$20,000 to manufacture pumps and machinery, by J. Comer Jones, and William Edward Fennell, both of Brookline, Mass., and Harry Fennell, Everett, Mass.

The Dow-Walen Co., Gloucester, Mass., has been incorporated to build automobiles, power boats, wagons, etc., with a capital stock of \$12,000, by H. L. Walen, R. H. Dow and Edward C. Bonia.

The Port Jefferson Marine Railway Corp., Port Jefferson, N. Y., recently was incorporated with a capital stock of \$60,000, by W. D. and M. C. Allen and G. M. Tooker.

The American Dock Co., Tompkinsville, S. I., N. Y., has awarded a contract to the Turner Construction Co., for erecting a 7-story warehouse, 120 x 160 feet, work on which is to be started May 1.

Capitalized at \$50,000, the Atlantic Boiler Cleaning Co., Newport News, Va., recently was incorporated by F. J. Deniston, H. M. Deniston and others.

The Parkersburg Dry Docks, Transportation & Coal Co., Moundsville, W. Va., recently was incorporated with a capital stock of \$250,000, by M. J. McQuade, J. R. Dorsey, Stephen Steranchak, James Ralph and R. A. Ralph.

The Carle Shipbuilding & Repair Co., Rockaway Beach, N. Y., recently was incorporated with a capital stock of \$25,000, by R. F. Lenahan, W. J. Francis and C. H. Carle.

The National Chain Co., College Point, L. I., N. Y., has purchased the factory building of the Belleville Products Co., Belleville, N. J., and will enlarge and use it for the manufacture of brass, steel and other chain.

Capitalized at \$300,000, the Baltimore Derrick & Salvage Corp., Baltimore, recently was incorporated.

The National Mercantile Marine, Baltimore, recently was incorporated with a capital stock of \$100,000.

Incorporation papers recently were filed by the Halschaw Steamship Lines, Baltimore, which is capitalized at \$300,000.

The Wyle-Sattery Co. is a new organization which was recently formed and which will perform all kinds of ship's service in New York harbor. Mr. Wyle, a member of the company, formerly was connected with the Harbor Launch Corp.

The St. Andrews Bay Foundry & Machine Co., Wilmington, Del., recently was incorporated

Business Changes

The China-Pacific Co. has been made representative of the Kerr Steamship line and the Roosevelt Steamship line in Japan, China and the Philippines. This company also is representative of the Columbia-Pacific Co. in northern China.

* * *

The Congress Coal & Transportation Co., which recently entered the coast-to-coast freight service, has made Frank K. Hitching general representative in San Francisco. Thomas James, formerly with the Pacific Mail and later with the Trans-Oceanic Co., has been appointed general freight traffic manager.

* * *

The Mcgee-Steer Co., Philadelphia, has been reorganized, the interests of John A. Steer and Charles H. Moore having been purchased. The company was incorporated with the following officers: W. B. Mcgee, president; Ralph Mcgee, vice president; Thomas Candlish, secretary and treasurer. The company intends to expand its business and will operate a regular service of general cargo steamers to Scandinavian and Baltic ports, together with the Mediterranean and South American trade.

* * *

Funch, Edey & Co., Inc., will remove their office to the thirteenth floor of the Cunard building, 25 Broadway, New York, about April 23.

* * *

N. B. Payne & Co., 25 Church street, New York, dealers in electric cranes and hoists, have extended their lines of material-handling machinery to include the portable conveyors of the A. C. Warner Co., Philadelphia. Chicago automatic coal elevators and the McKinney-Harrington package pilers and car loaders. Edmund Otto, for many years secretary of the Hardware & Supply Co., and prior to that associated with Manning, Maxwell & Moore, Inc., New York, is now associated with N. B. Payne & Co., in this branch of their business.

* * *

J. H. Dieckmann Jr., dealer in hardwoods and lumber, has moved his office to 110 Sutter street, San Francisco. His office was formerly located at 519 California street.

* * *

Cox's Shipping Agency, Inc., has recently opened an office at 8-10 Bridge street, New York, to transact chartering agency, ship brokering, insurance, forwarding, general shipping business, etc. Frank W. Relyea, formerly general traffic manager of Livermore, Dearborn & Co., New York, and traffic manager of the United American Lines, Inc., New York, has been appointed vice president of the corporation and will manage the business in the United States.

* * *

B. H. Elliott, Inc., Houston, Tex., recently organized, plans a shipyard at Harrisburg, Tex.

in Delaware with a capital stock of \$100,000, to build and operate boats, derricks, cranes, etc.

Capitalized at \$100,000, the Hawk Steamship Line, New York, recently was incorporated by M. Bab and others.

The King Philip Steamship Co., Boston, recently was incorporated with a capital stock of \$300,000.

The Inoko Dredging Co., recently was incorporated at Wilmington, Del., with a capital stock of \$170,000.

The New Jersey Gauge Co., Inc., 712 Monroe place, West New York, N. J., recently was incorporated with a capital stock of \$100,000, to manufacture gages, and precision equipment.

New Trade Publications

PUMP GOVERNOR—A new bulletin of the Atlas Valve Co., 282 South street, Newark, N. J., is devoted to the new line of pump governors of which this firm has just acquired the sole manufacturing and selling rights. The bulletin is unusually complete, showing photographs, cross sectional drawings both of parts and of method of installation. The types described include governors for turbine or reciprocating steam driven pumps, marine turbines, fire pumps, lubricating oil pumps, bilge pumps, fuel oil pumps, pump governor for superheated steam, automatic shutoff pump governor, relief valve for oil pumps. A section also is devoted to governors for accumulators and for pumps for low pressure salt or fresh water, acids, oil, ammonia, gas or air line service.

BUNKER OIL—The system for handling bunker oil from storage in inner-bottom tanks of steam vessels, developed by Row & Davis Engineers, Inc., 90 West street, New York, is described in a bulletin now being distributed. This system is designed to reliquidize congealed fuel oil of any grade without the use of coils or grids. This is of value in assuring positive pumping and fuel delivery under any temperature conditions. The bulletin outlines thoroughly the method of applying and operating the system, and shows a typical piping diagram.

CORROSION PREVENTION—An illustrated booklet and several pamphlets have been issued by the Briggs Bituminous Composition Co., 17 Battery place, New York, outlining this company's method of preventing corrosion. These coatings are said to be unaffected by salt water, acids and other agents. The different types are described and their application by various steamship companies and navies throughout the world are outlined. The bulletin covers thoroughly the many marine uses to which these coatings have been applied.

HAMMER DRILL—The Chicago Pneumatic Tool Co., Chicago, is distributing a small pamphlet covering its hammer drill for demolition work. While primarily of advantage to the contractor, this drill has been adapted for shipyard use in the demolishing of heavy concrete forms.

WATER HEATER—The use of water heaters, their construction and general description are given in a new bulletin of the Griscom-Russell Co., 90 West street, New York. The pamphlet also contains a description of the method for computing savings resulting from the use of feed water heaters.

PNEUMATIC RIVETERS—The Hanna Engineering Works, Chicago, has issued an illustrated catalog describing its latest type of riveting equipment and showing application of these riveters to shipbuilding, boiler, tank, structural, bridge, car and automotive work. Tables are presented showing pressures required to drive various sized rivets. The catalog describes the particular features of these riveters including mechanism which is combined in simple form toggles, levers and guide links to give the designed die movement.